AIR-DRY LUMBER AND $AVE *p.46*

WOODCRAFT® magazine

Projects, Techniques, and Products

Make this Mahogany *Garden Glider* *p.36*

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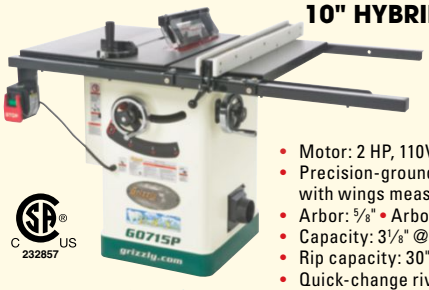

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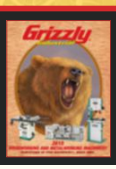

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- Maximum chisel stroke: 6¼"
- Maximum workpiece width: 9"
- Chuck capacity: ½"
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- Motor: 2 HP, 240V, single-phase, 12 Amps
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- Maximum cutting width: 7"
- Maximum planing height: 7½"
- Maximum planing depth: ⅛"
- Maximum moulding depth: ¾"
- Feed rate: Variable • Cutterhead type: Square
- Knife size: 7⅞" x 1½" x ¼" HSS
- Cutterhead speed: 7000 RPM • 4" dust port
- Rubberized steel feed rollers • Powder-coated finish
- Approx. shipping weight: 324 lbs.

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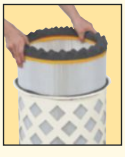
- Motor: 1½ HP, 110V/220V, single-phase, TEFC, 3450 RPM
- Air suction capacity: 775 CFM
- Static pressure at rated CFM: 1.80"
- Intake port: 6" with included 5" optional port
- Impeller: 13½"
- Height: 65½"
- Built-in remote control switch
- Approx. shipping weight: 210 lbs.



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- Impeller: 12¾" balanced cast aluminum
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- Standard bag filtration: 2.5 micron
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- Bag size (dia. x depth): 19½" x 33"
- Powder-coated finish
- Height with bags inflated: 78"
- Approx. shipping weight: 122 lbs.

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WOODCRAFT magazine
April/May 2015

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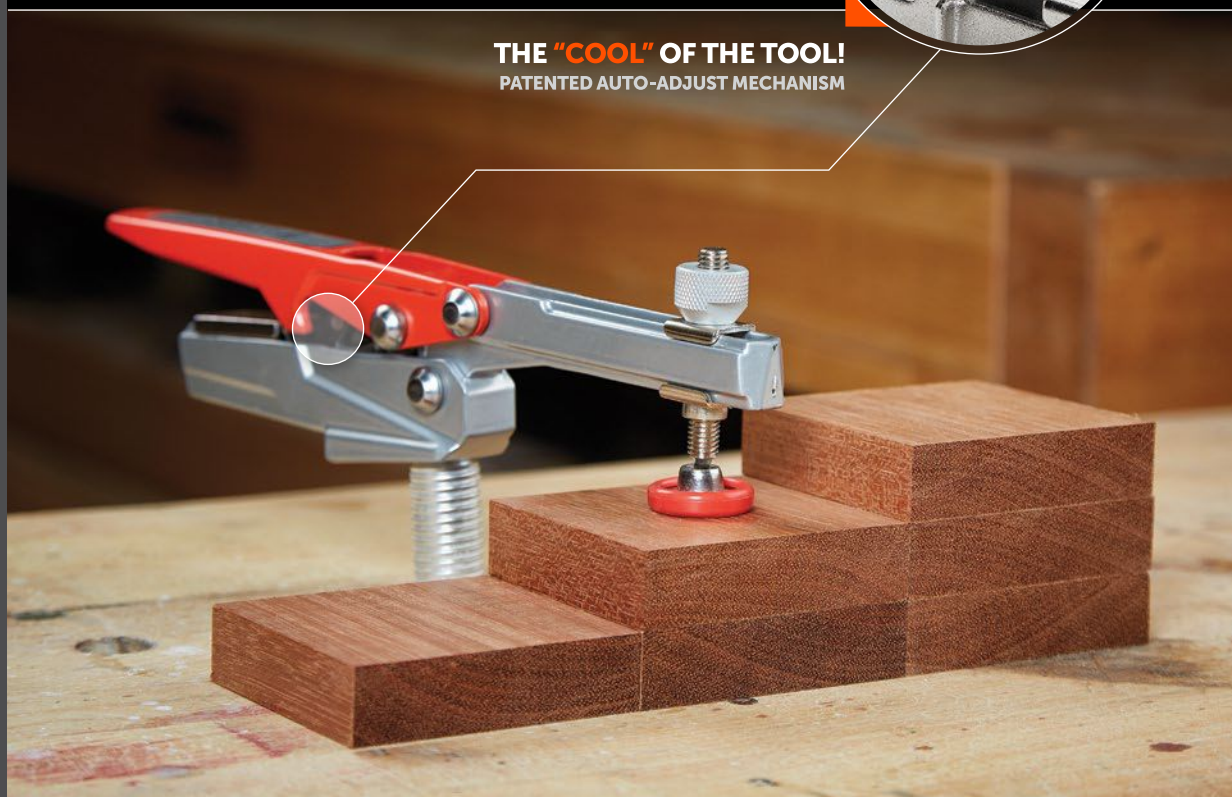

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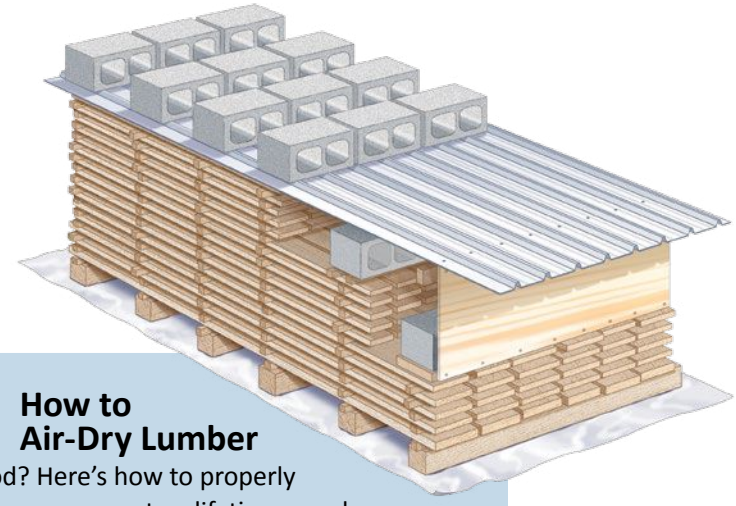
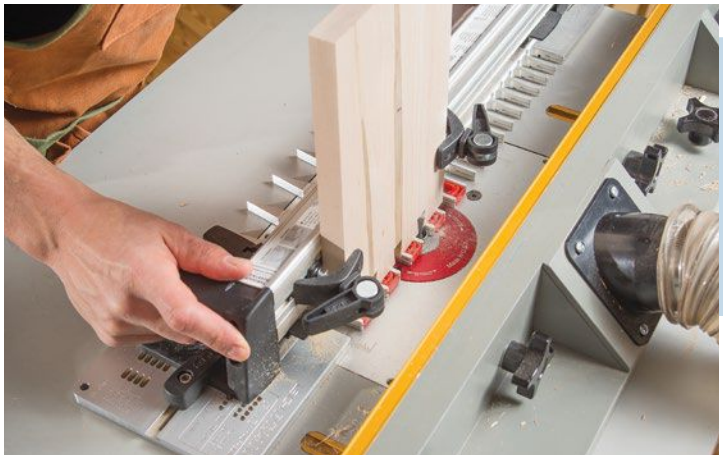


Departments



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And the Winners are...

In the Dec/Jan 2015 issue, we celebrated 10 successful years of publishing what we (the staff) feel is a must-have, information-packed magazine for active woodworkers interested in well-designed projects, technique stories, tips, and product write-ups. As part of the celebration, we launched our **$10,000 Blockbuster Sweepstakes**, allowing you to participate and possibly win some pretty awesome prizes. I am happy to say that the level of participation blew us away with over 45,000 unique entries. Now, it's time to announce the big winners from those who tossed their names in the hat.

Bob Beanblossom, a customer at the Eugene, Oregon, Woodcraft store where he filled out his entry form, said that his Grand Prize of the JD Lohr Morris chair and ottoman will be a perfect fit for his new Arts & Crafts home at Eagle Point.

Having entered at the Harrisburg, Pennsylvania, Woodcraft store, Robert Rosborough of Mechanicsburg was ecstatic to learn he won Second Prize, a 14" Jet lathe, model 719400K, and a set of Easy Wood Tools. A devoted woodturner, Robert had considered upgrading to a better lathe for years and had come close to trying out the innovative Easy Wood turning tools that don't require sharpening. Now that Lady Luck has punched his ticket, two of his woodworking wishes have come true.

Third Place winner Douglass Timberlake of Strong, Maine, entered through *Woodcraft Magazine* and was delighted that he won the Rikon 18" bandsaw, model 10-341. It turns out that his benchtop bandsaw was not up to resawing, which, as a furnituremaker, proved disappointing. "Not anymore," said Doug. "I plan to put the machine to work in my new shop when I tackle my upcoming High Boy chest project.

To Bob, Robert, and Douglass, and to the 10 winners of the 1st 5 Years CD of *Woodcraft Magazine* and the five winners who will receive one-year subscriptions, congratulations.

WOODCRAFT magazine

April/May 2015
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Safety First! Working wood can be dangerous. Always make shop safety your first priority by reading and following the recommendations of your machine owner's manuals, using appropriate guards and safety devices, and maintaining all your tools properly. Use adequate sight and hearing protection. Please note that for purposes of illustrative clarity, guards and other safety devices may be removed from tools shown in photographs and illustrations in this publication.

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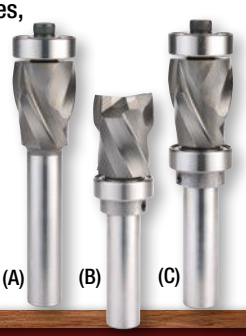

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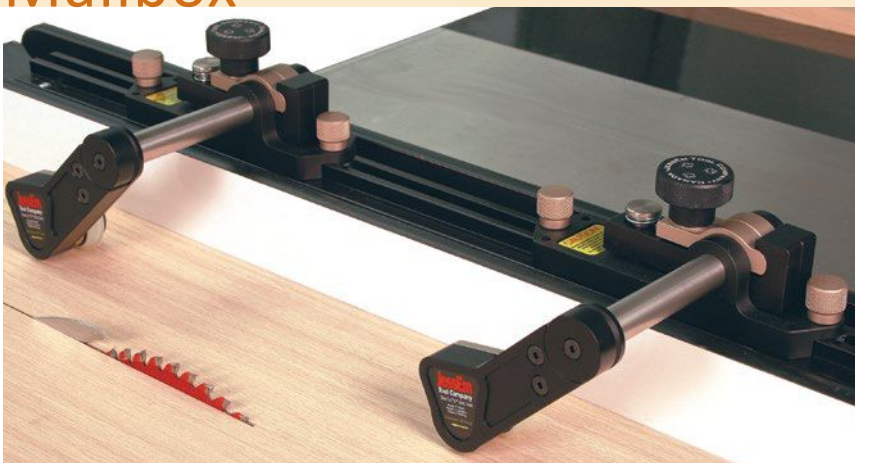

A second look at JessEm's Clear-Cut Tablesaw Guide

In the Feb/Mar 2015 Hot New Tools column, we stated that JessEm's Clear-Cut Tablesaw Guides would only accommodate stock thicknesses up to 13⁄16". Clearly, something got lost in translation. The guides can accommodate stock thicknesses 13⁄16" above the mounting surface. Attaching the T-track to the 2½" tall fence on my tablesaw, I determined the rollers could handle a 3 5⁄16"-thick board–exceeding my saw's maximum cutting height by more than ½". Like the router table guides, the tablesaw guides are smooth operators. I apologize for any confusion.
—Joe Hurst-Wajszczuk, Senior Editor

More oddballs for your eyeballs

Here's an idea to add to your "Oddball Aids" piece in the Feb/Mar 2015 issue. In addition to sandbags to dampen the vibration to the machines or serve as clamps, I use lead shot in heavy canvas bags to weigh down glue-up areas that are difficult to reach with clamps. Because shot weighs more per square inch, I like it better than sand for applying pressure.
—Jack Stanford, Brownwood, Texas

There's an aid that you didn't show in your oddball collection: a brown paper bag. When I put a final finish on a project, I wait for it to cure for 24 to 48 hours. Then I rub it with a brown paper bag. It removes any dust nibs and smooths the finish. It's like using 600-grit sandpaper, and it doesn't mar the surface. What a tool!
—Chuck Petrovich, Lake Arrowhead, California

Errata

As careful as we are, errors occasionally find their way into articles. If you spy an apparent mistake, particularly in a project article, please visit *woodcraftmagazine.com* and click on "corrections."

Parking a plane

I have a question about Geoff Noden's "Hand Plane Showcase" in the Dec/Jan 2015 issue of *Woodcraft Magazine*. I was always taught to rest a plane on its side, and to never set it with the cutting edge touching the bench. Therefore, when using this cabinet, is it necessary to either retract the blade first, or to create a recess in the ramp at the plane mouth?
—Ralph Simermeyer, Derwood, Maryland

Ralph, it sounds like we had the same shop teacher. The thought was that standing the plane on the bench might cause blade damage. This left me wondering how the blade then held up so well when repeatedly pushed along a board. On the other hand, I have heard it suggested that a plane lying on its side leaves its blade vulnerable to damage from nearby tools. So what's correct? It's your call. In this case, my only concern might be marring the finish on the plane cabinet ramps. If you're worried, designer Craig Bentzley suggests that an easy fix for protecting both the blade and the finish would be to adhere a strip of veneer to the ramp slightly forward of each plane's mouth opening.
—Geoff Noden, Trenton, New Jersey

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SawStop Jobsite Tablesaw

SawStop's newest saw may primarily be aimed at jobsite carpenters, but there are lots of reasons that small shop woodworkers should be eyeing it too. The first ten you can count on your hands, since this saw includes SawStop's famous finger-saving blade-brake technology. But this tool's features go way beyond that, especially when compared to many other portable tablesaws. For example, most other saws require 20+ rotations to raise or lower the blade, while this one does it in a single turn of the handwheel. Adjusting the bevel angle is just as easy. Simply squeeze the paddle behind the handwheel, tilt the blade, release the paddle, and then fine-tune the angle with the MicroTilt wheel. The Jobsite sports a solid-locking T-Glide rip fence and a rail-guided extension table that slides out to support rips up to 25½" to the right of the blade. The included low profile blade guard increases visibility and helps protect against kickback. For non-through cuts, you can switch-in the riving knife with the flip of a lever.

Innovation doesn't stop at the top. The blade shroud maximizes the dust-collecting abilities of any shop vac, and the built-in drawer keeps parts close at hand. Finally, the pedal-activated stand folds and unfolds easily, while the large wheels allow easy navigation on almost any terrain.

Because wet contruction stock can trigger the brake, the operator can "ask" the saw if questionable material is too conductive by simply touching the wood to the blade. Lights on the saw's front will indicate if the material requires the no-brake bypass mode.

This saw isn't inexpensive, but its features (including the blade brake) all add up to a smart investment for any carpenter, DIY enthusiast, or small-shop woodworker.

#862994, **$1299.00**
Tester: Andew Bondi

Featured products available from Woodcraft Supply unless otherwise noted.

SawStop photos: Manufacturer

Do-it-all dust buster

Oneida Dust Cobra

Although this portable dust collector was designed primarily for floor refinishers, woodworkers will soon discover how well Oneida's compact cyclone can meet a variety of needs in a small woodshop. With its tiny 20 × 20" footprint and short 52" stature, the Cobra weighs in between a high-end shop vacuum and a typical dust collector. This makes it a viable solution for woodworkers who might need both dust- and chip-collecting machines, but can only afford one.

According to its specs, this pint-sized cyclone provides twice the suction of premium dust extractors (23" of static pressure). Although the overall airflow (245CFM) is about half that of full-sized dust collectors, I found that the Cobra could handle any dust- or chip-making machine in the shop. Perhaps the only disadvantage is the 17-gallon steel drum. Although it is considerably larger than most shop vac containers, you'll be using this machine so frequently that you may wish it had larger capacity.

#159240, **$899.99** (drum level indicator, hose, & wheels sold separately)
Tester: Joe Hurst-Wajszczuk

Featured products available from Woodcraft Supply unless otherwise noted.

Oneida photo: Larry Hamel-Lambert

Mighty midi

Rikon 70-220VSR Midi Lathe

The ever-growing number of midi-class lathes suggests that woodworkers are interested in ambitious turning projects. However, larger motors and the expansive list of features on midi lathes have also resulted in higher prices. For this reason, many entry-level turners settle for a smaller ½ HP mini lathe or patiently save up for a full-sized lathe. If you have grown tired of waiting to turn and don't want to get stuck turning only pens and ring boxes, you need to check out the Rikon 70-220VSR.

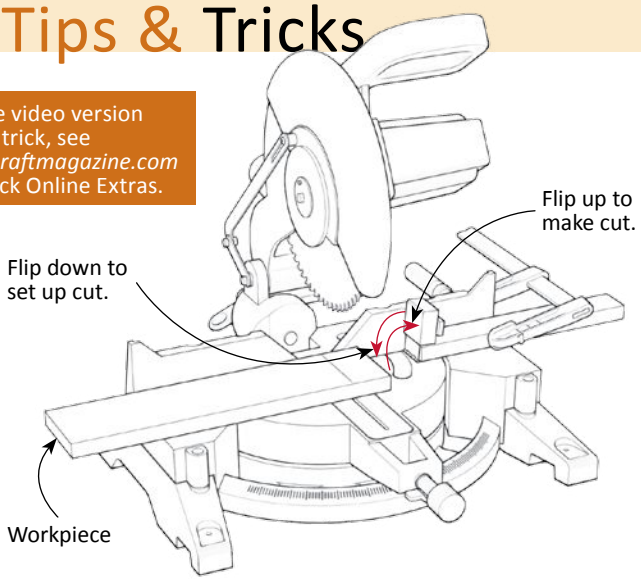
Despite a footprint that's only slightly larger than a mini, this affordable midi lathe sports the same features found on the best (and most expensive) lathes in its category. With its 12½" swing, stout 1" tool post, and 1-HP motor, the Rikon is fully capable of tackling good-sized bowls. The digital-readout speed control allows dialing in variable rpm ranges of 250-750, 550-1650, and 1300-3850.

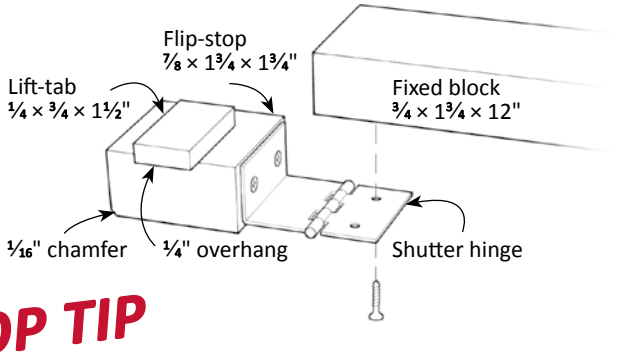
Like other top-shelf lathes, this one can run in reverse for finish sanding. The 20" center-to-center turning capacity can be increased with an optional bed extension.

#861205, **$649.99**
Tester: Andrew Bondi

Rikon photo: Manufacturer

For the video version of this trick, see *woodcraftmagazine.com* and click Online Extras.





TOP TIP

Mitersaw flip-stop

Clamping a stopblock to the right-hand side of a power mitersaw blade to register short multiple workpieces can be dicey. That's because the freed workpiece becomes trapped between the blade and the block, inviting kickback. Although you could set up the cut by placing a removable spacer against the stopblock, I find it more efficient to use a flip-stop.

Here's a very effective flip-stop made from two blocks of wood connected with a shutter hinge. To use it, simply locate the stop where desired, and then clamp the fixed block to your saw fence. Set up the cut by butting your workpiece against the flip-stop, and then lift it up out of the way before making the cut.

The wraparound shutter hinge (*www.hardwaresource.com*, #504050, $6.59/pr.) is crucial to the jig's operation. This hinge's low pivot point produces an arc that allows the stop to swing clear without pushing against and shifting the workpiece...almost. To create the needed clearance, simply cut a 1/16" chamfer on the bottom corner of the block.

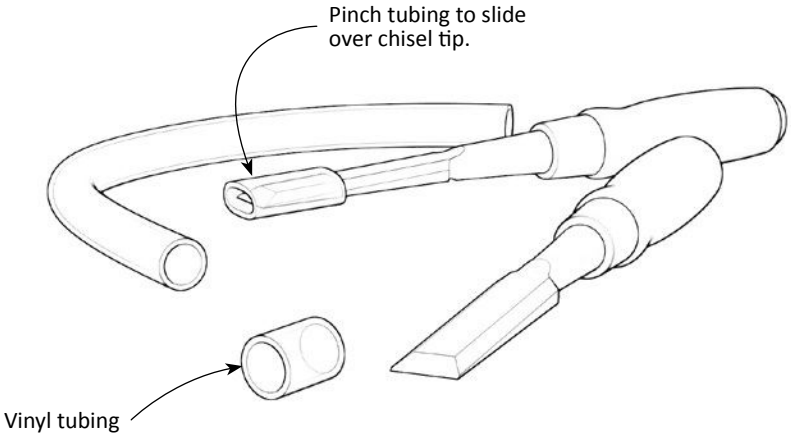
—John Cusimano, Lansdale, Pennsylvania

Share a Slick Tip. Win Cash or a Prize!

Here's your chance to help someone become a better woodworker and get rewarded for the effort. The winner of next issue's **Top Tip** award will receive a **Woodcraft Gift Card worth $250**. All others will receive **$125** for a published illustrated tip, or **$75** for a non-illustrated tip. Published tips become the property of *Woodcraft Magazine*. Send your ideas to:

Tips & Tricks, *Woodcraft Magazine*, P.O. Box 7020, Parkersburg, WV 26102-7020 or visit woodcraftmagazine.com, and click on "Submit Tips." Important: Please include your phone number, as an editor may need to call you if your trick is considered for publication.

Nonslip chisel guard

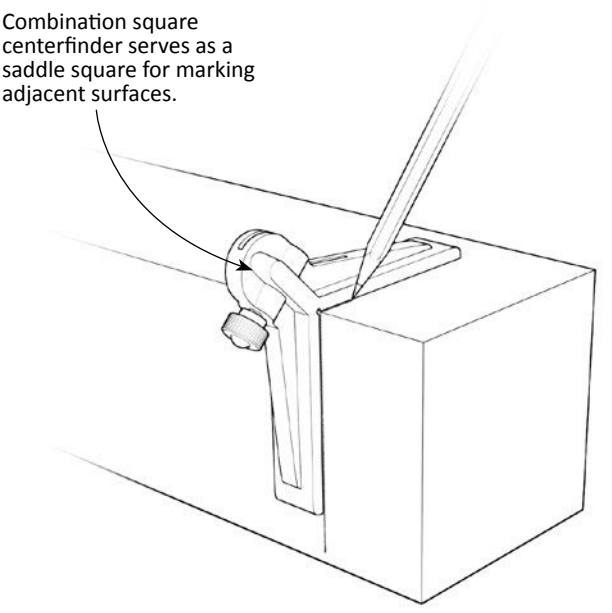


My good bench chisels enjoy a safe home near my workbench, but my jobbers aren't so lucky, as they're typically banging around unfettered in my toolbox. Looking for a way to protect freshly-honed edges from accidental abuse, I experimented with a few scraps of thick-walled vinyl tubing left over from a plumbing project. I found that the tubing (sold by the foot at most hardware stores) offers good protection and even allows me to carry chisels safely in my shop apron. To outfit a chisel, simply pinch a short section of tubing to widen its opening, and then slide it over the chisel tip. The vinyl springs back and clamps tightly onto the blade.

Matching tubing and chisel sizes involves some trial and error. For a nonslip fit, select a tube with an interior diameter (I.D.) that's slightly less than the width of the blade. Smaller-diameter tubes compress to only about ⅛" wider than their interior diameter, while larger tubes flex enough to fit blades ¼" to ½" larger than the I.D.

—Joe Hurst, senior editor

Illustrations: Christopher Mills



Centerfinder as saddle square

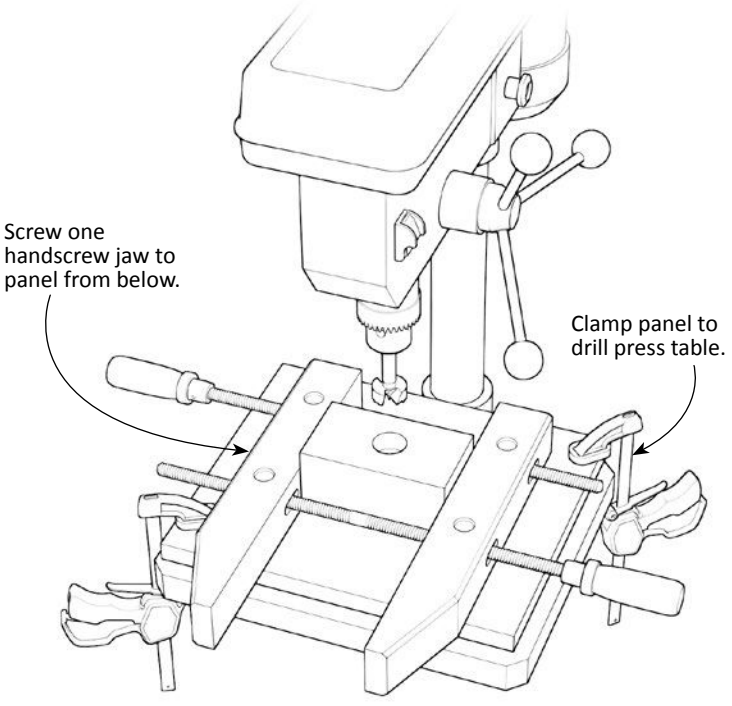
I enjoyed Andy Rae's article on the combination square in the February/March issue. One little trick I'd add is that you can use the accessory centerfinder as a saddle square. Because its faces are at a 90° angle, you need only position one leg of the centerfinder against a cutline drawn on one face of your stock, and then carry the line onto the adjacent face. Simple. Sweet. Accurate.
—Don Wood, Galena, Ohio

Repurposing a narrow bandsaw blade

You just installed a brand-new ⅛" blade on your bandsaw and are cruising along in the cut when all of a sudden you hear a "snap!" Yep, your blade has broken. If you don't have a welder, that expensive blade would usually go to waste. Not with me. I turn it into scrollsaw blades by using heavy duty snippers to create lengths that fit my scrollsaw. All that's left is to file down a few teeth at each end to fit between my scrollsaw's blade clamps.
—Danny Lash, Magnolia, Texas

A better handscrew drill press vise

Many woodworkers know that you can pull a wooden handscrew into service as a drill press vise. However, I've found that it can be difficult to set up the workpiece and hold the clamp in place, especially when drilling large holes–an operation that can wrest the setup from your grip. I've found that a much better solution is to screw one jaw of the handscrew to a plywood panel from below. This fixes everything in place for easier setup and allows you to clamp the panel to the machine table for rock-solid security when drilling.
—Bill Wells, Olympia, Washington



Little Free Library

An outdoor cabinet for sharing favorite books

By Ken Burton

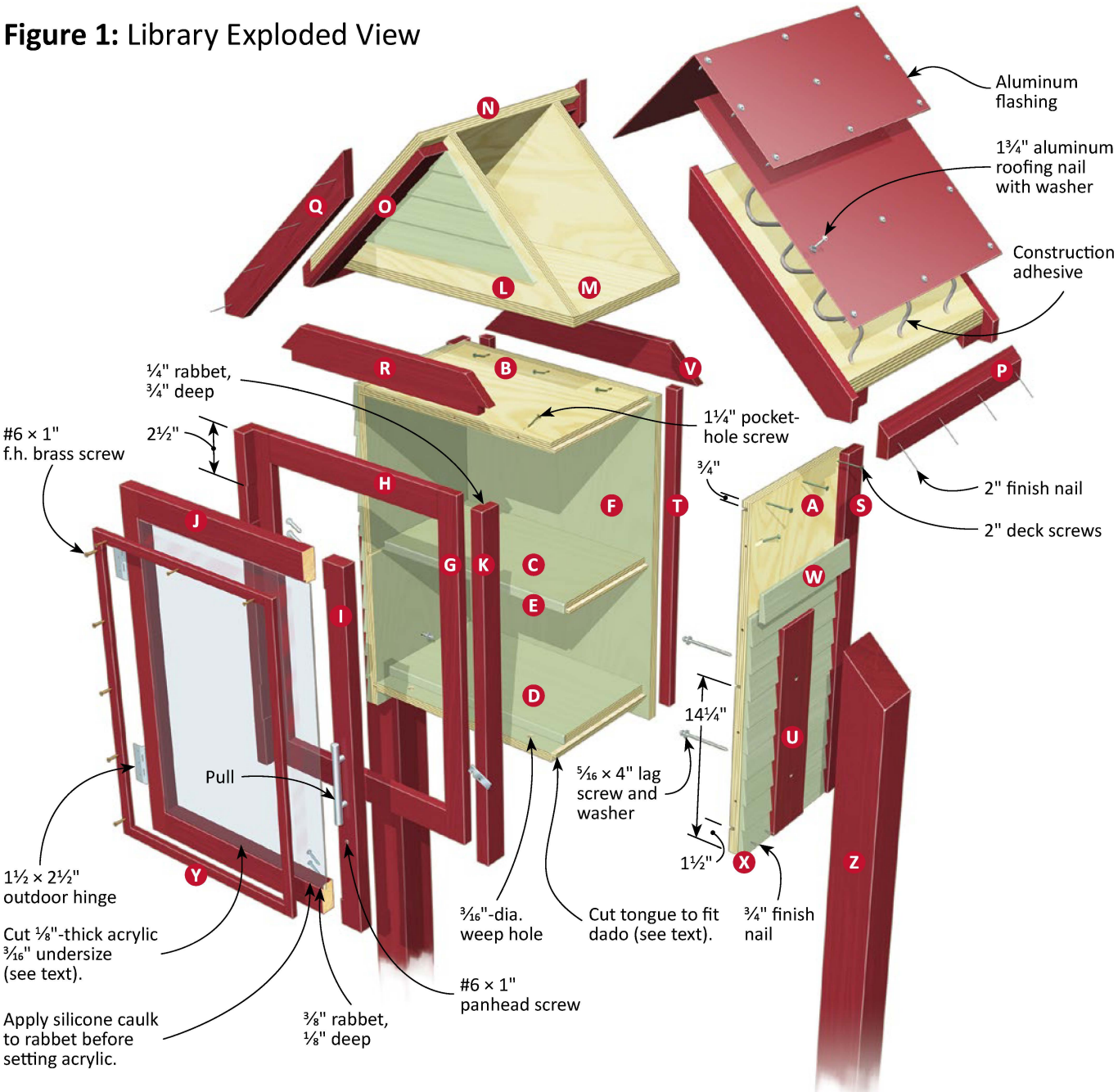
Overall dimensions: 23½"w × 19¾"d × 40½"h

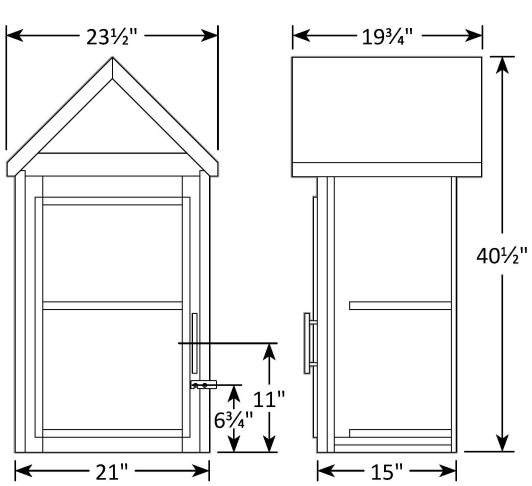
The Little Free Library (LFL) concept is built on six little words: "Take a book. Return a book." Despite, or maybe because of, the idea's inherent simplicity, this grassroots initiative has been surprisingly successful. Since its start in 2009, more than 15,000 LFLs have been set up around the world.

This case is held together with pocket screws and dado joints, and decked out with trim–a perfect project to hone your skills, or to introduce woodworking to the next generation. But this project is more than just another box. When I had my students build libraries as part of my residential construction class, I was delighted to watch how the project connected the students to their communities. It was gratifying to see the pride they had in their libraries, as demonstrated by the extra time they freely gave to get them finished.

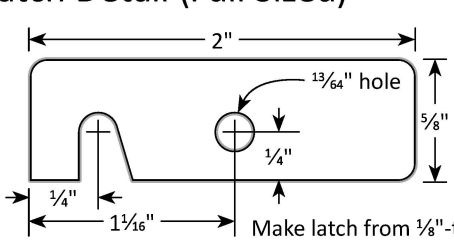
After you've picked a suitable outdoor spot, simply set up your library, and then stock it with the books you love and want to share. As your neighbors catch on, you'll see the collection circulate. You may decide to serve as the de facto librarian, monitoring the collection, culling unpopular titles, and getting first pick of the best sellers.

Figure 1: Library Exploded View





Latch Detail (Full Sized)



Make latch from ⅛"-thick aluminum.

To learn more about LFLs, to register your project, and to purchase a LFL placard, go to *littlefreelibrary.org*. To connect with fellow builders, check out "Neighborhood Library Builders Guild" on Facebook.

Opening photo: Paul Anthony; Project photos: Ken Burton; Illustrations: Trevor Johnston

Position the good side of the A/C plywood down, and cut the dadoes across the sides. Use a stop to keep the spacing consistent on both panels.

Run the panels on edge to ensure perfectly-fitting tongues. A sacrificial pushblock guides the panel and prevents tear-out.

Make the case

1 Cut the sides (A), top and bottom (B), and shelves (C, D) to the sizes listed in the **Cut List**. *Note: I cut the plywood case and roof parts out of a single sheet. For a plywood cutting diagram, go to* woodcraftmagazine.com/onlineextra.

2 Cut two strips of edging (E) to face the front edges of the shelves. Cut the pieces about 1/16" wider than indicated in the **Cut List**. Spread glue on the front edges of the shelves (C, D) and attach the edging with 1½" finish nails. Set the nails so you can fill the holes before painting. When the glue dries, trim the edging flush with the faces and ends of the shelves.

3 Set up a ¼"-wide dado blade on your tablesaw, set the cutting height to ⅜", and cut three dadoes across each side (A), as shown in **Photo A**.

4 Without changing the blade height, increase the width of the dado head to ⅝". (The exact width isn't critical; the cutter just needs to be wider than ½".) Next, lower the cutter by about 1/32". (This offers a little leeway in case the groove depths vary.) Now set the fence a fat ¼" from the inside edge of the cutter, and cut a test tongue on a piece of scrap plywood. Bump the fence over until the resulting tongue fits snugly. Finally, cut tongues on both ends of the top and bottom (B) and the middle shelf (C), as shown in **Photo B**.

5 Dry-fit the case to make sure everything fits. Next, run a water-resistant glue (I used Titebond II) along the dadoes in the sides, insert the top, bottom, and shelf, and assemble, as shown in **Photo C**. Make sure that the back edge of the shelf is flush with the back edges of the sides. Reinforce each joint with three 2" deck screws. Countersink the heads so they will not interfere with the clapboards.

6 Measure the case, and cut the back (F) to match its outside dimensions. Glue the back in place, and fasten it with four 2" deck screws driven into each side and two 2" deck screws driven into the top and bottom (B) and the middle shelf (C).

7 Place the bottom shelf (D) inside the case on top of the bottom (B). Screw it in place with four 1¼" screws driven up through the bottom. (This extra thickness lifts the bottom books up off the case's floor, offering extra insurance should water work its way in.) Now drill two 3/16"-diameter weep holes through the bottom, where shown in **Figure 1**.

Position one side on your bench, set the tongues into the side's dadoes, and then tip the upper side into place. To avoid glue drips, work quickly.

Set the rail squarely against the stile, and join the two with pocket screws. Use a clamp block to prevent shifting.

Make the face frame and door

1 Cut the stiles (G, I) and rails (H, J) for the face frame and the door to the sizes listed in the **Cut List**. Drill pocket screw holes in the ends of the rails.

2 Assemble both the face frame and the door frame by spreading glue on the ends of the rails, clamping the joints flat on your benchtop, and then driving screws into the pocket-hole slots (**Photo D**).

3 Cut the front corner boards (K) to size. Cut a ¾"-wide rabbet, ¼" deep, along one corner of each piece. Mortise the left-hand corner board and mating door stile for the hinges. Locate the mortises 2½" in from the ends of the stiles. Glue the corner boards to both sides of the face frame, where shown in **Figure 1**.

4 Chuck a rabbeting bit in your router, adjust the height to match the thickness of the acrylic you'll be installing in the door, and rout a ⅜"-wide rabbet around the inside edge of the door frame's outer face. (Cutting the rabbet on the outer face of the frame helps keep water out.) Square the corners of the rabbet with a chisel.

5 Drill a series of pocket holes in the case to attach the face frame (H, G). Drill four in each side and three across the top and bottom. Position the face frame on the front of the case so that the corner boards overhang the sides by ¾", and then glue and screw the face frame and corner boards (K) to the front of the case, as shown in **Photo E**

6 Hang the door in the opening with its hinges; at this point only use one screw per leaf. Check the door's fit. Trim if necessary to leave a ³⁄₃₂" gap at the top and along the edges.

Tip Alert

Packing tape can help keep parts from sticking together and facilitate cleanup.

Drive pocket screws through the untrimmed exterior for a solid and invisible means of securing the frame and corner boards to the case.

Make the roof

1 To make the two gables (L), cut a piece of plywood to 15⅝" square. Next, set your miter gauge to 45°, and cut the piece diagonally, as shown in **Photo F**. Cut the roof base (M) so its width matches the depth of the case (including the face frame) and its length matches the long edges of the gables.

2 Clamp one of the gables flat on your bench, and attach the roof base to it, as shown

Use an auxiliary fence and a stop on your miter gauge to help control the piece as you cut the angled ends of the gables.

With a gable flat against your bench, butt the roof bottom against its bottom edge and join the two with 2" screws.

in **Photo G.** Repeat with the second gable. Four 2" screws per joint will do the trick.

3 Cut the two sheathing pieces (N) to the length given in the **Cut List**, but leave them each about an inch wider for now. Tilt the blade on your tablesaw to 45°, and bevel one long edge of each sheathing piece. Hold one of the pieces in place on the gable assembly (L, M) with the tip of the mitered edge touching the corner of the roof base (M). Mark the sheathing for width at the peak of the gable. Return your saw blade to vertical, and cut the marked sheathing piece to width. Glue and screw the sheathing to the gables with six 2" deck screws (3 per gable). Be sure to center the sheathing from front to back.

4 Repeat the process with the second sheathing board. This time, however, mark the piece for width at the top corner of the piece you just installed.

5 Cut the four filler (O) pieces so they fit under the overhanging sections of the sheathing. Miter one end of each, align it with the lower end of the sheathing, and then mark and cut each piece to length in turn. (Two of the pieces will be shorter than the other two due to the lap at the peak.) Glue and screw them in place with 1¼" screws.

6 Place the roof assembly (L, N, M, O) on top of the case and fasten it with six 2" screws driven up through the case top.

Install the trim

1 Cut the face boards (P), the rake boards (Q), the cornice boards (R), the side corner boards (S), and the rear corner boards (T) to the widths listed in the **Cut List**, leaving the pieces long for now.

2 Tilt the blade on your tablesaw to 45°, and bevel one long edge of each of the face boards (P). Glue and nail them in place along the bottom edges of the roof sheathing (N) with 2" finish nails.

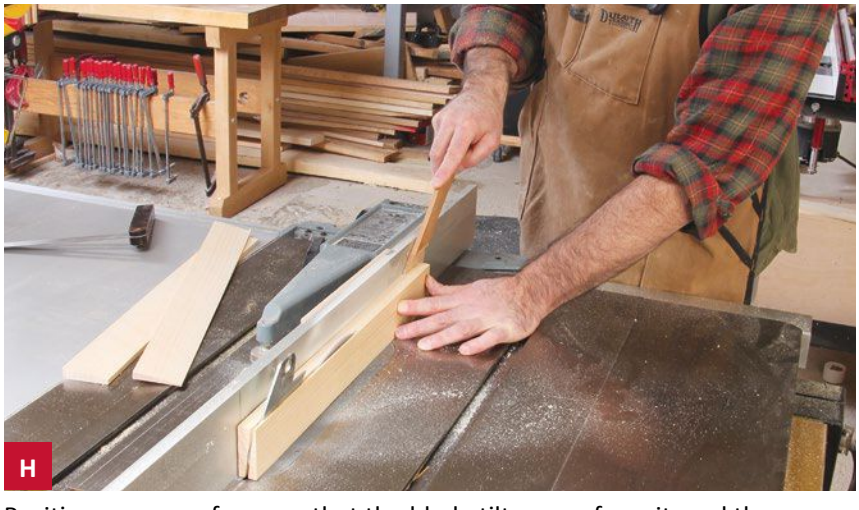
3 Miter the upper ends of the rake boards (Q) where they meet at the peak. Mark them for length at the eave, and make these angled cuts as well. Glue and nail them in place along the sides of the roof with 2" galvanized finish nails.

4 Miter and notch the ends of the front cornice board (R) so it fits against the underside of the roof and laps over the face frame by ½". The notches are necessary to fit the piece between the front corner boards. Glue and nail the piece in place with 2" finish nails. Miter the ends of the rear cornice board so it fits under the roof and laps the back by ½"–no notches required. Glue and nail it in place.

5 Trim the rear and side corner boards (S, T) to fit, and then glue and nail them to the back corners of the case with 2" finish nails.

6 Cut the spacers (U) to size. Glue and screw them to the case sides with 1¼" screws, centering the pieces from front to back.

7 Rip the clapboards (V, W, X) to width. (I was able to get more than enough siding from eight 6'-long 1 × 3 boards. Select clear stock.) Next, tip the blade on your tablesaw to 83° (7° from vertical), and bevel all the pieces, as shown in **Photo H.** (Note: The exact bevel angle on the clapboards isn't critical. Aim to make the pieces about ¼" thick at the top and ½" thick at the bottom.)



Position your saw fence so that the blade tilts away from it, and then run the strips on edge to create the beveled clapboard siding.

Attaching the clapboards with glue reduces the need for nails, lessening nail-filling and sanding later on.

Finishing touches

1 Prime and paint all of the trim and the inside of the library. I used General Finishes Tuscan Red Milk Paint on the trim and door and Basil Green on the clapboards and interior. (Note: When selecting paint for the interior, choose a paint that resists "blocking." Blocking is when the dry paint sticks to objects that rest upon it.)

2 Trim the clapboards for the sides and back (V, W, X) to length so they fit snugly between the corner boards. Working from the top down, glue and nail the strips in place (**Photo I**) using ¾" finish nails. Two nails per side strip and three per back strip should suffice. Fill the nail holes, sand the filler, and spot paint.

3 For the clapboards on the gables, work from the bottom up. Miter the ends of the first piece so it fits snugly under the roof. Glue and nail it in place with ¾" finish nails. Repeat with the next two pieces. The last piece on each gable will be a small triangle. Cutting it to the right length should adjust its width to fill the remaining space.

4 Using metal snips, cut three pieces of aluminum flashing for the roofing to 18" × 22¼". Draw lines 1" in from every edge with a permanent ink marker. Once hemmed, the pieces should overhang the structure by ¼" on all sides. (Note: A hem is a metal edge that is folded back on itself. Hemming makes the metal stiffer and conceals the sharp edge. If you have access to a metal brake, use it to fold the hems and shape the cap.)

5 Rip a 45° bevel along one edge of a 24" long piece of 1×3. Place a piece of flashing on your bench so its edge overhangs the bench by 1", and clamp the beveled board on top. Using a second board, fold the flashing up along the edge of the bevel, as shown in **Photo J**.

6 Complete the hem by gently hammering the fold closed with a flat-faced mallet, as shown in **Photo K**. Hem all four sides of each piece of flashing. Next, fold one of the hemmed pieces of flashing in half to form the cap piece.

7 Paint the flashing with a metal primer and enamel topcoat. Next, run a bead of construction adhesive around the perimeter of the sheathing boards and a squiggle down the center, and then fasten the metal in place with 1¾" aluminum roofing nails equipped with neoprene washers. (Be sure to drive the nails into the rake boards (O) along the edges; otherwise, the nails will poke through.)

Tip Alert

Prime and paint the edges and outside face of each of the clapboard pieces. This will save a lot of masking and cutting in later.

Clamp the beveled board against your layout line and flush to the edge of your bench, and then use the second board to start the hem.

Hammer the fold over with a mallet to complete the hem. Strike gently to avoid kinking the edges.

Installation Notes

I set the posts in 3'-deep holes, but since building code footing depths vary from one region to the next, you should check with your local building department before you pick up a posthole digger. Make sure to ask about buried cables and pipes. Most areas offer a free "Call before you dig" service to prevent expensive (and potentially dangerous) surprises.

8 Cut a piece of ⅛" acrylic to fit in the rabbet in the door. (Make it about 3/16" undersize in both directions to allow for expansion.) Bed it in a bead of silicone caulk. Now, cut the (prepainted) retaining strips to fit, and screw them in place with 1"-long flathead brass screws. Attach the handle and latch (made from ⅛"-thick aluminum stock. See **Latch Detail**, page 23), and then hang the door.

9 Determine the posthole depth (see "Installation Notes," above), and then cut the mounting posts (Z) so that the library will sit about 32" above the ground. Miter the top ends to 45°, and round over the corners with a ½" round-over bit. Prime and paint the posts before attaching them to the library with 5/16" galvanized lag screws and washers, where shown in **Figure 1**. ■

About Our Author

Ken Burton has been working with wood since his father gave him a real set of tools at age six. He currently operates Windy Ridge Woodworks and still smiles when he thinks about working in his dad's basement shop.

Little Free Library Cut List

	Part	Thickness	Width	Length	Qty.	Mat'l
A	Sides	¾"	11¾"	27¾"	2	Ply
B	Top/Bottom	¾"	11¾"	18¾"	2	Ply
C	Middle Shelf	¾"	10"	18¾"	1	Ply
D	Bottom Shelf	¾"	10"	18"	1	Ply
E*	Edging	¼"	¾"	18¾"	2	P
F*	Back	¾"	19½"	27¾"	1	P
G	Face Frame Stiles	¾"	1¾"	27¾"	2	Ply
H	Face Frame Rails	¾"	2¼"	16"	2	P
I	Door Stiles	1"	1¾"	27¼"	2	P
J	Door Rails	1"	2¼"	15½"	2	P
K	Front Corner Boards	1"	2¼"	27¾"	2	P
L*	Gables	¾"	11"	22"	2	Ply
M*	Roof Base	¾"	12½"	22"	1	Ply
N*	Sheathing Boards	¾"	16⅛"	18¼"	2	Ply
O*	Filler Pieces	¾"	2½"	16¼"	4	Ply
P*	Face Boards	¾"	2⅛"	18¼"	2	P
Q*	Rake Boards	¾"	2"	18"	4	P
R*	Cornice Boards	1"	2⅝"	22"	2	P
S*	Side Corner Boards	¾"	1¾"	27¾"	2	P
T*	Rear Corner Boards	¾"	1"	27½"	2	P
U	Spacers	¾"	4"	17"	2	P
V*	Long Clapboards	½"	2⅛"	17½"	15	P
W*	Medium Clapboards	½"	2⅛"	11½"	12	P
X*	Short Clapboards	½"	2⅛"	3¾"	34	P
Y	Retaining Strips	⅜"	1"	24⅝"	4	P
Z**	Posts	3½"	3½"	68+"	2	PT

* Indicates that parts are initially cut oversized. See instructions.

**Length depends on frost line.

Materials: Ply= ¾" AC Plywood, P=Pine, PT=Pressure Treated

Convenience-*PLUS* BUYING GUIDE

☐ 1.	General Finishes Milk Paint, Basil Green, quart	#828542	$24.99
☐ 2.	General Finishes Milk Paint, Tuscan Red, pint	#148937	$16.99
Above items are available at Woodcraft stores, *woodcraft.com* or by calling (800) 225-1153. Prices subject to change without notice.			
☐ 3.	Amerock BP 19010SS, Stainless Steel Bar Cabinet Pull, *www.amazon.com*		$6.65

Hardware: 1¾" pocket screws, 2" deck screws, 1¼" deck screws, ¾" and 2" galvanized finish nails, (14) #6 × 1" brass screws, 1½ × 2½" outdoor hinges, ⅛ × 16 1/16 × 23 5/16" acrylic sheet, silicone caulk, metal spray primer spray enamel (for hinges), 20" × 72" aluminum flashing, construction adhesive, 1¾" aluminum roofing nails with neoprene washers (40), 5/16 × 4" galvanized lag bolts (4), 5/16" washers (4), ⅛"-thick aluminum stock.

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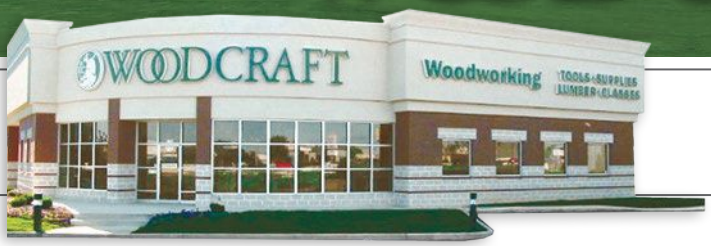

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Baked Goods Pedestal

A turning that's guaranteed to take the cake

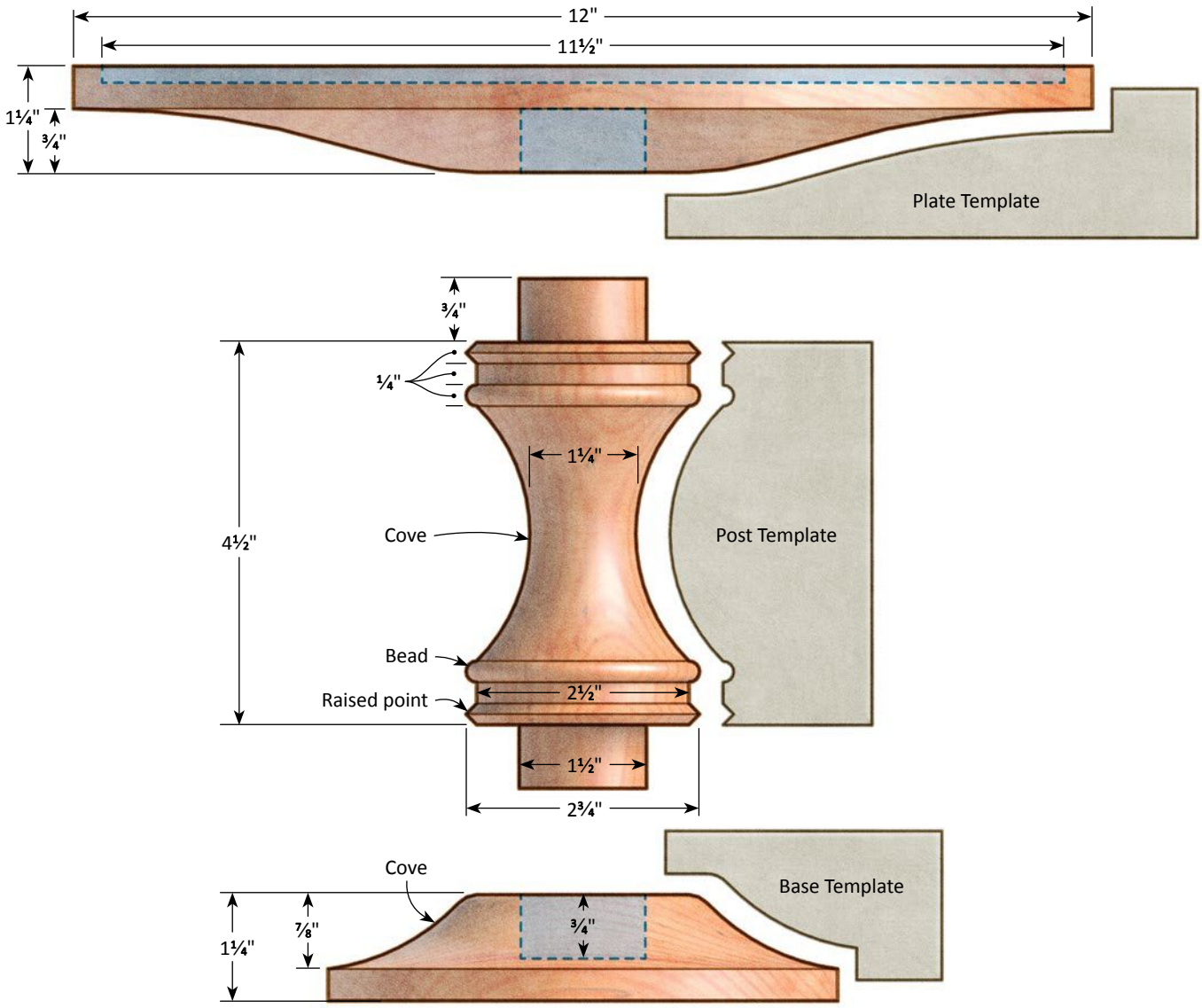
By Michael Kehs

Dimensions: 12" dia. × 7" high

Any artist who premiers his or her work in public will tell you that it's all about the presentation. A magnificent painting mounted in a crummy frame is going to lose some allure; that's just the way it is. And we all know that a birthday gift somehow seems more valuable when it's wrapped with a bow.

Likewise, any chef knows that presentation is as important as taste, which is where this lovely pedestal comes in. It elevates your baked goods to high style while keeping them fresh under a classy glass dome. When you set this piece on the dessert table, woodworking aficionados in the vicinity are likely to start salivating over the shapely turning as much

Figure 1: Baked Goods Pedestal



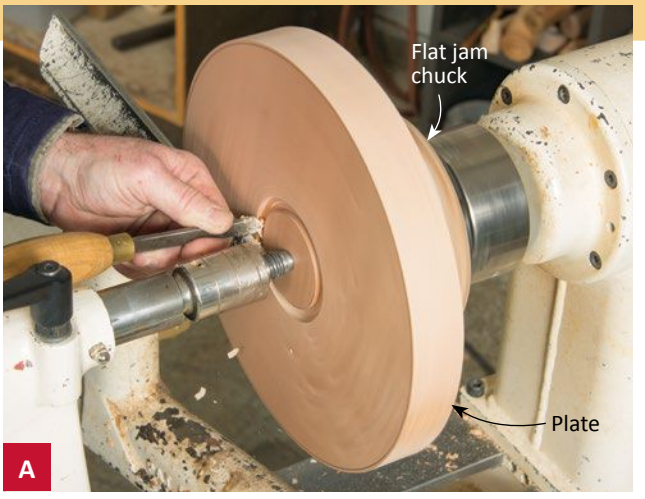
Half-sized patterns; enlarge 200%. For downloadable full-sized patterns, visit *woodcraftmagazine.com* and click on Magazine Patterns.

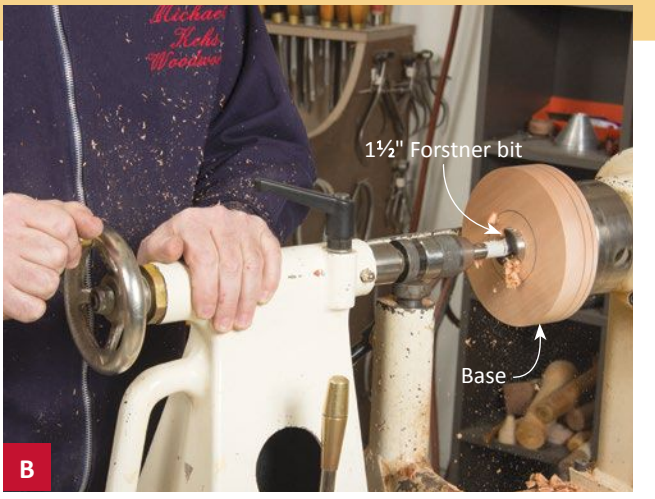
as they may drool over the edible offerings it presents.

Part of the beauty of this project is that it's easy to make, doesn't cost a lot in the way of materials, and offers a great exercise in both spindle turning and faceplate turning. I made this from cherry, but any other close-pored hardwood like maple, birch, or beech will finish up as nicely. That said, an open-pored wood will work, but you may want to use grain filler to ensure a smooth finished surface.

Note: I bought my 11¼"-diameter glass dome from williams-sonoma.com *(item #2579332) for $39.95. If you choose something different, get it before starting work, so you can modify the plate to suit, adding about ¾" to the dome diameter.*

Opening photo: Larry Hamel-Lambert; Photos: Paul Anthony; Illustrations: John Hartman





Turn the base and plate

1 Make a jam chuck, as described in the sidebar on page 33.

2 Lay out the blanks for the plate and base on 1½"-thick stock. Using a compass, lay out the center and 12" diameter on what will be the top of the plate. Similarly, mark out the center and 6"-diameter on what will be the bottom face of the base. Then bandsaw the blanks to shape, cutting slightly outside your lines.

3 Draw a circle about 2¾" in diameter on the bottom of the base and the top of the plate to establish the tenon shoulders, and then another circle at about 3½" in diameter to designate the width of the groove that will create the tenon.

4 Mount the plate blank between the chuck you made in **Step 1** and a live center in the tailstock, with the top face of the plate towards the tailstock. Working at about 800 rpm, turn a ¼"-long tenon

Using Grain Filler

If you choose to use an open-grained wood like walnut, oak, ash, or mahogany, you may want to fill the pores before applying a finish to ensure a mirror smoothness. Wood grain filler is available in "clear," "natural," and colored forms. (I prefer Old Masters brand, available at many hardware stores or online). Natural is typically used on lighter colored woods, but can also be tinted with colorants to suit your chosen wood.

For turnings, first use a paper towel to scrub filler into the surface, working in the direction of the grain with the lathe turned off. While the filler is still damp, turn on the lathe (at 400-600 rpm for smaller diameter pieces, and 200-300 rpm for larger pieces), and use a soft cotton cloth to wipe off all the excess. Follow up with a thorough wiping with a clean cloth with the lathe still running. Let the filler dry overnight, and then sand along the grain with the finest previous grit used. After wiping the surface clean, you're ready to apply finish.

using a parting tool (**Photo A**). Repeat for the base, turning the tenon in the bottom face.

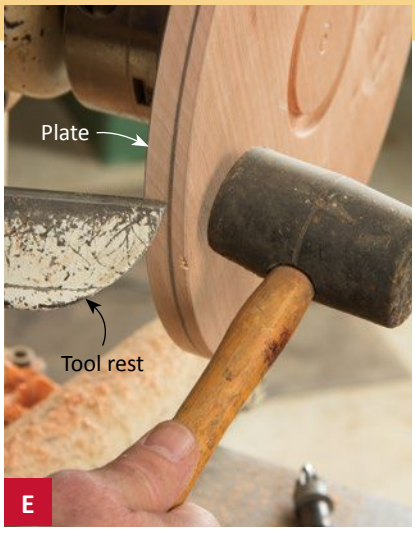
5 Mount the base tenon in your four jaw chuck. True up the edge at about 800 rpm using a ½" bowl gouge. Put a mark on the edge at 1¼" from the top of the base and another at ⅞". Mark out a 2¾"-diameter circle, which defines the contact area with the bottom of the post. Then, at 400 rpm, drill a 1½"-diameter hole ¾" deep (**Photo B**).

6 Using a bowl gouge, shape the top of the base at about 1,100 rpm, cutting from the 2¾"-diameter circle out to the ⅞" mark on the edge (**Photo C**). If it helps you, create a template as shown in **Figure 1**, and use it to check your progress. Sand the cut area through 220 grit, and ease the sharp edge where the inner flat meets the cove. Avoid the blank perimeter in order to retain the pencil line. Apply grain filler if desired.

7 Mount the plate tenon in your four jaw chuck, and true up the edge with a bowl gouge at about 600 rpm. Put a mark on the edge at 1¼" from the bottom of the plate and another at ¾". Mark out a 2¾"-diameter circle on the bottom of the plate, which defines the contact area with the top of the post. Then drill a 1½"-diameter hole ¾" deep at the center of the underside of the plate, again at about 400 rpm.

8 At about 900 rpm, shape the plate in the same manner as the base, cutting from the 2¾" circle out to the ¾" mark on the edge. Sand as before, and apply grain filler if desired.

9 Mount the base on a chuck with #1 jaws, spreading them inside the hole drilled in the top of the base. Now, at about 1,100 rpm, turn down to the 1¼" mark, creating a ⅛" or so deep recess across the bottom of the base at the same time (**Photo D**). Sand and fill the grain if desired.



10 Similarly mount the plate onto the #1 jaws, but leave the chuck just shy of tight for the moment. Next, to minimize wobble, align the tip of your tool rest with the pencil line on the edge, and rotate the plate by hand to inspect for alignment, tapping it where necessary to adjust it (**Photo E**). Now, tighten the chuck, adjust your lathe speed to about 900 rpm, and turn the surface down to the 1¼" mark using a bowl gouge. No need to fuss the flatness at this point; just make sure it's not bellied outward.

11 Measure the outside diameter of your glass dome, add ⅛", and mark half of that as the radius of your plate recess.

12 Using a parting tool at about 900 rpm, cut three depth-reference grooves, insetting the outermost groove about ¼" from your recess line. Aim for a groove depth that's just shy of ⅛", as measured from a straightedge spanning the top (**Photo F**).

A Simple Jam Chuck for Flat Work

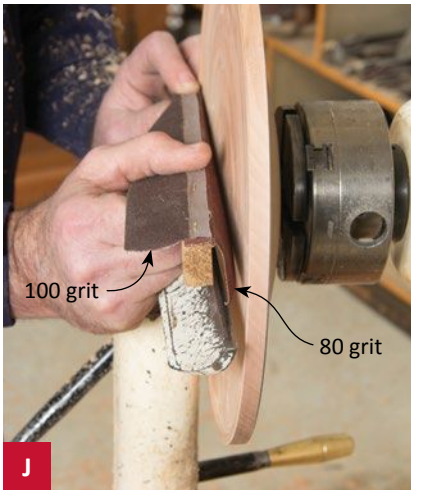
I did the initial turning of this plate and base using a shop-made flat jam chuck, which can be employed for any flat workpiece. The chuck is simply a 6"-diameter MDF disc with a facing of ⅛"-thick neoprene rubber, which provides the necessary friction. In use, the workpiece is pressed between the chuck in the headstock and a live center in the tailstock.

To make one, begin by bandsawing a disc of ¾" (or thicker) MDF to an appropriate diameter; the bigger the disk, the better the grip. Then use spray adhesive to attach ⅛"-thick neoprene rubber to the disc. Computer mouse pads with only one slick face are a good source of neoprene; just make sure to glue the slick face to the disk. Alternatively, you can use nonslip pad (Woodcraft item #123633), although it's not as durable as neoprene. Screw the disc to a lathe faceplate, and turn the edges for balanced concentricity. Now you're ready to work.


G


H


I



J

13 Working at 900 rpm, use a ½" bowl gouge to cut the ⅛"-deep recess, swooping inward toward the center in short, ever-increasing diameters (**Photo G**). Switch to a ¼" bowl gouge to round the transition from the inner edge of the rim to the flat section of the recess. Keep the tool bevel oriented parallel to the outer edge of the plate throughout the cut (**Photo H**). (Note: In the photo, I'm gently pressing the tip of the gouge against the raised lip using my thumb. This prevents the tool from being pushed backward and affords great control for the cut.) Check your results with a wooden straightedge, mark any high spots, and then use a flat scraper with slightly rounded corners to finesse the surface (**Photo I**).

14 Sand with 80-, and then 100-grit paper attached to a straight board that's about ½" shorter than the width of the recess (**Photo J**), working the sanding stick side-to-side. (Note that the sanding stick in the photo is being held away from the piece simply for better visibility. In use, the stick rides on the tool rest.) Finish-sand using a power sander with a 3" disc. Hand-sand the radius at the lip, and then the plate edge. Apply grain filler if desired.

Turn the post

1 Mount a 3 × 3 × 6"-long post blank between a cup center in the headstock and a live cup center in the tailstock. Set your lathe speed to about 1,500 rpm, and use a bowl gouge to turn the square blank to a rough cylinder. Next, use a parting tool to cut a few 2¾"-diameter reference grooves, and then use a spindle roughing gouge to create a 2¾"-diameter cylinder.

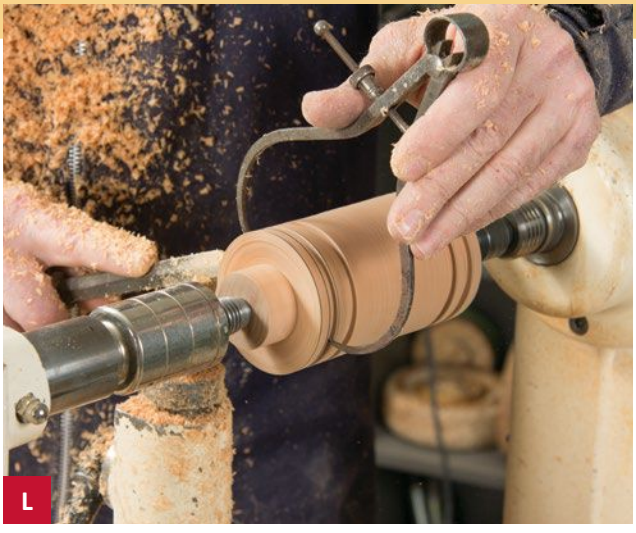
2 Mark off a ¾"-long tenon on each end of the post blank. Use a parting tool to cut the tenons, slightly undercutting each shoulder to ensure intimate contact with the base and plate (**Photo K**). I finesse the fit of one tenon before moving on to the other, removing the piece to test the fit in the mortise to ensure that it's snug.

3 Mark off the post details, where shown in **Figure 1**. On each end, use a parting tool to cut a 2½"-diameter depth-reference groove on the centermost side of the bead and a 2½"-diameter flat between the raised point and bead (**Photo L**).

4 Shape the raised points with a ⅜" spindle gouge (**Photo M**), and then round over the beads with the same gouge (**Photo N**).

5 Mark the center of the cove, and use a parting tool to cut a 1⅜"-diameter depth-reference groove. Then use a ½" spindle


K


L

gouge to shape the cove to a final diameter of 1¼" (**Photo O**).

6 Sand the piece through 220 grit, and fill the grain if desired.

Assemble and finish

1 Glue up the pedestal. If the post tenons fit their mortises as they should, just tap the parts together; there's no need for clamps. If the fit is wobbly, I suggest gluing them together with epoxy mixed with some sanding dust to serve as filler.

2 Apply the finish of your choice. I wiped on one coat of Watco Danish Oil, reapplying it over the course of 15 minutes to make sure it stayed wet. I then let it stand for 15 more minutes before wiping off the excess. After it cured for a couple of days, I vigorously buffed it to a shine.

3 Have your cake and eat it too. ■


M


N


O

About Our Author

Michael Kehs has been carving and turning wood for 30 years. In addition to creating award-winning designs for commission and exhibition, he teaches woodcarving and turning at his studio in Bucks County, Pennsylvania, and at the local Woodcraft store in Allentown, Pennsylvania.

Mahogany Glider

Rock away the dog days of summer in this stylish seat.

By Brian Stauss

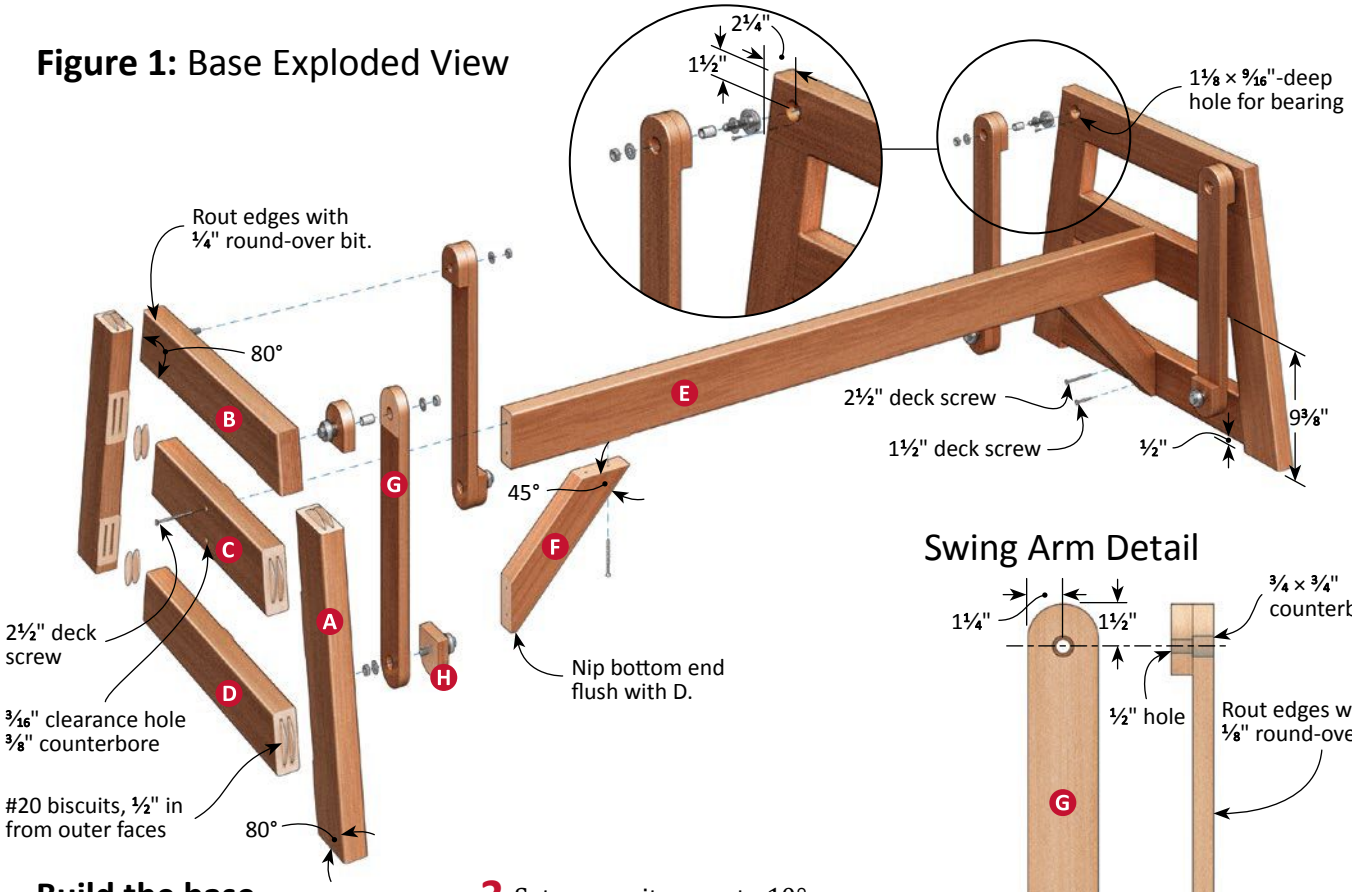
Overall dimensions: 28⅜"w × 58¾"l × 34¾"h

Other than a tall glass of iced tea, nothing complements a summer day better than a comfortable seat. This attractive outdoor glider fits the bill. Unlike standard benches or chairs, this two-seater hangs on long swing arms mounted on heavy-duty bearings that allow it to sway with the gentlest push.

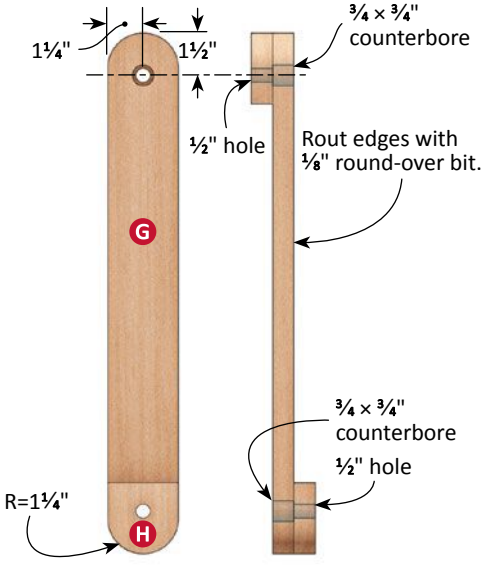
Despite its complex appearance, this project isn't that difficult when you break it down to its subassemblies. As you'll see, I used biscuits and screws where I could and reserved the mortises and tenons for the spots requiring more substantial joinery. A plunge router equipped with an edge guide can make quick work of the larger mortises in the front and back legs. To rout the narrow back rails for the splats, I devised a simple, stable jig that guarantees straight, centered slots.

This project would look good in a variety of exterior-grade hardwoods, including teak or white oak. I chose mahogany because of its reputation for standing up to rough weather, and I applied several coats of marine varnish for a finish befitting a wooden boat. (To prevent your project from turning grey prematurely, I recommend setting it out of direct sunlight and covering it or bringing it indoors when the cold weather sets in.) Paint will hide the grain, but it would offer better protection and permit you to use a less expensive wood, such as cedar or cypress.

Figure 1: Base Exploded View



Swing Arm Detail



Build the base

1 From 8/4 material, mill the stock for the legs (A), top rails (B), middle rails (C), bottom rails (D), stretcher (E), and stretcher braces (F). Referring to the **Cut List**, rip the parts to width. Cut the stretcher to length, but leave the other parts 1" oversized in length for now.

2 Referring to the **Base Exploded View**, above, arrange the legs (A) and rails (B, C, D) to make two base side assemblies. Orient the parts to suit the grain, and then label each part using pencil or chalk. Note the directions of the miters on the ends to prevent any miscuts.

Tip Alert

Sanding away milling marks is easier before assembly, just take care not to round over the edges or ends of boards that will be joined to other parts.

3 Set your mitersaw to 10°, and cut the legs and rails to the lengths listed in the **Cut List**. Use a stopblock to ensure that the matching parts are the same lengths. (Note: Setting the miter angle once and flipping the stock to cut opposing angles–rather than re-setting the saw in the opposite direction–will guarantee that the parts fit tightly together. To control tear-out on the bottom face of the board, set the parts on a scrap piece of plywood or MDF when cutting.)

4 Reposition the legs and rails. (Slide the middle and lower rails up as needed so that they fit tightly between the legs.) Mark a line across the center of each joint on the outside faces of the stock for biscuit slot and screw references. Next, lay out the hole locations for the glider bearings on the inside faces of the top rails (B) and the screw holes on the outside faces of the middle rails (C).

5 At the drill press, use a 1⅛" Forstner bit to bore the 9/16"-deep holes for the glider bearings on the inside faces of the top rails (B). Next, drill the 3/16" clearance and ⅜ × ¼"-deep counterbore holes (for the plugs) in the middle rails.

6 Position the legs and rails on your bench with the centerlines facing up. To cut the paired biscuit slots, flip the biscuit joiner fence down to locate a #20 biscuit slot about ½" below the top face of a board. Cut the first slot at each joint location, flip the stock, extend your biscuit centerlines to the opposite face, and then cut the second slot.

Photos: Ralph Anderson; Illustrations: Christopher Mills

Make a pair of 10° angled cauls to draw the legs to the rails and a straight caul to pull the top rail to the legs.

7 Dry-assemble a base side assembly (A-D) to rehearse the clamp up. (A few scrap wood cauls can help. See **Photo A.**) When you're ready, apply glue (I used Titebond III), insert the biscuits, and then assemble a side. Wipe away squeeze-out with a clean, damp rag. When the glue has cured, repeat with the other side assembly.

8 Rout the edges of both base side assemblies (except the bottom ends of the legs) and the edges of the stretcher (E) and stretcher braces (F) with a ¼"-radius round-over bit. Then finish-sand through 220 grit.

9 Attach the stretcher (E) to the middle rail (C) using 2½"-long deck screws.

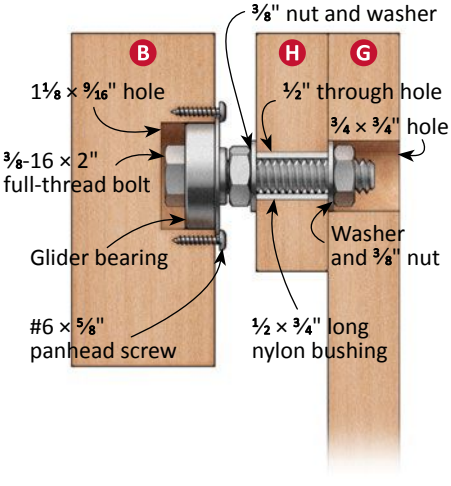
10 Flip the assembled base (A-E) upside down, measure the diagonal distance between the bottom rail (D) and stretcher (E), and trim the stretcher braces (F) to fit. Nip the bottom tips of the braces even with the bottom edge of the bottom rail. Using a drill press and angled support block set against your fence, drill ⅜" counterbore holes and 3/16" clearance holes in the top end of both braces. Now attach the braces with deck screws, where shown in **Figure 1**.

Now for the swing arms

1 From 4/4 stock, mill the four swing arms (G) and eight end blocks (H) to the sizes listed in the **Cut List**.

2 Glue the end blocks to the arms. (Note that the blocks attach to one face at the top end, and the opposite face at the bottom.) When the glue dries, lay out the hole locations and the radiused ends where shown in **Swing Arm Detail**, page 37. (Note: To save time and avoid errors, I made a full-sized pattern to lay out the holes and radiused ends.)

Figure 2: Glider Bearing Detail



3 At the drill press, bore the ¾ × ¾"-deep counterbores through the swing arms (G) and the ½" through holes through the end blocks (H).

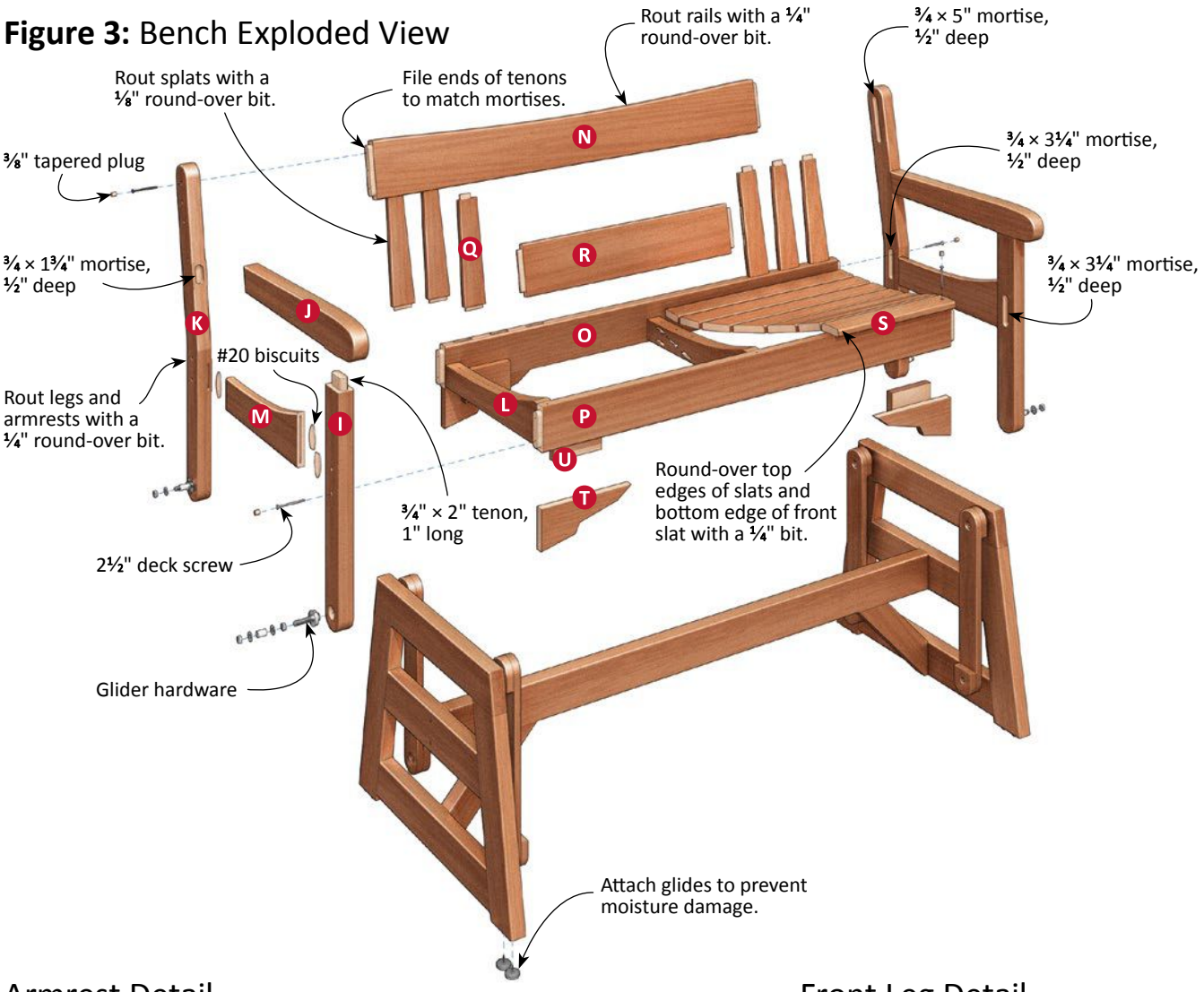
4 Bandsaw the ends of the arm assemblies, staying just outside your lines, and then finish up with a belt or disc sander. Rout the edges with a ⅛"-radius round-over bit.

5 Insert a ⅜-16 × 2" hex head bolt (replacing the 1½"-long kit bolts) into each glider bearing, install a nut, and then press a bearing into the holes in the top rails (B). Secure each bearing to the rail with three #6 × ⅝" kit screws, as shown in **Photo B**.

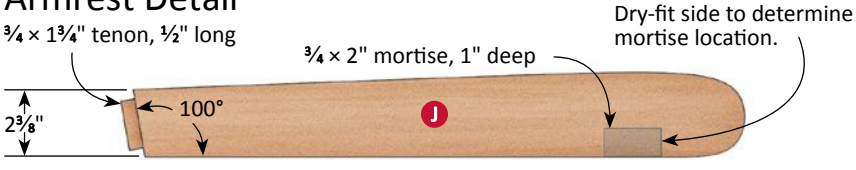
6 Trim the nylon bushings to ¾", and then slide one into the top ends of each swing arm assembly (G, H). Referring to the **Base Exploded View**, page 37, and **Glider Bearing Detail**, attach the swing arm assemblies to the base assemblies. Put the base aside for now.

Drive the screws so that the heads press the glider bearing's lip against the top rail. Use three screws per glider bearing.

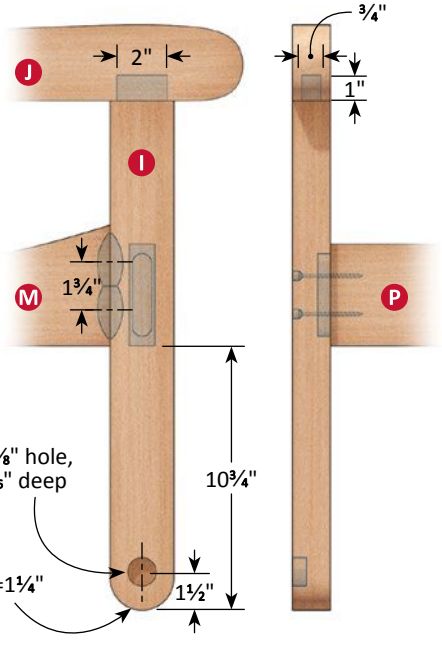
Figure 3: Bench Exploded View



Armrest Detail



Front Leg Detail

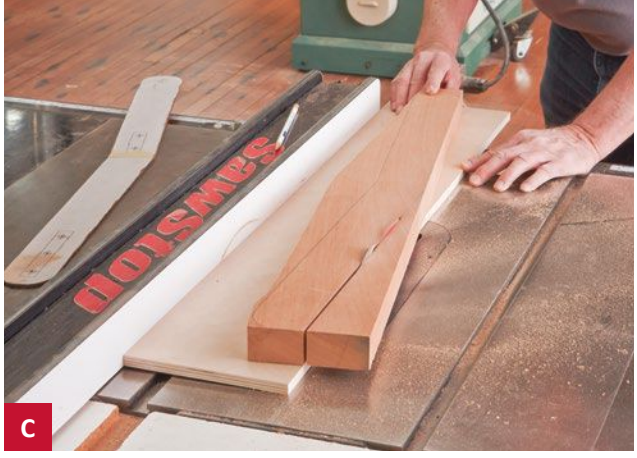


Make the bench sides

1 From 8/4 material, mill stock to make the front legs (I), armrests (J), rear legs (K), and slat supports (L). Mill the seat stretchers (M) from 4/4 stock. (Note: If your stock allows, you can get both rear legs from a 7¾"-wide board, as shown in the **Rear Leg Detail**, page 40.)

2 Make a full-sized pattern of the rear leg (K) on ¼"-thick hardboard or plywood. Include the locations of the rail mortises and the hole for the glider bearing. (Note: When cutting the rear leg pattern, consider using your tablesaw to practice the tapered and stopped cuts.) While you're at it, make the armrest (J), seat stretcher (M), and slat support (L) patterns.

3 Position the rear leg pattern's bottom edge against a jointed edge of your stock and trace it out. Label the top and bottom ends of the leg on



C

Using a plywood sled to trim the front edges of the rear legs ensures a straight, square edge.

D

Keep the leg's front edge against the fence when ripping the outside edges. Pay attention to the stop line to avoid overcutting.

your stock to avoid accidentally mortising the wrong end. Flip the pattern over and end-for-end, then trace the other leg, again positioning the rear leg pattern's bottom edge against a jointed edge. (If you were able to trace both legs onto a single board, use a bandsaw to separate the two.)

4 Rip a strip of scrap plywood to approximately 7" wide. Without moving the fence, affix a rear leg to the plywood with double-sided tape so that its uncut front edge overhangs the edge of the plywood. Now make the cut, as shown in **Photo C**. Repeat with the other rear leg.

5 To determine where to stop the cuts on the back face, raise the blade to the necessary height, set a wood block against the front-most teeth, and draw a stop line on your saw's table. Draw a line on the edge of the leg blank where the inside of the upper taper meets the lower leg. Next, set the fence 2½" from the blade. As you saw the first edge, stop the cut in front of the stop line, hold onto the leg blank, and turn off the saw. Now flip the leg blank end over end, and make the second stop cut, as shown in **Photo D**. Repeat the process with the other rear leg.

6 Complete the stop cuts on both rear legs (K) with a bandsaw or handsaw, and then clean up the front and rear edges as needed.

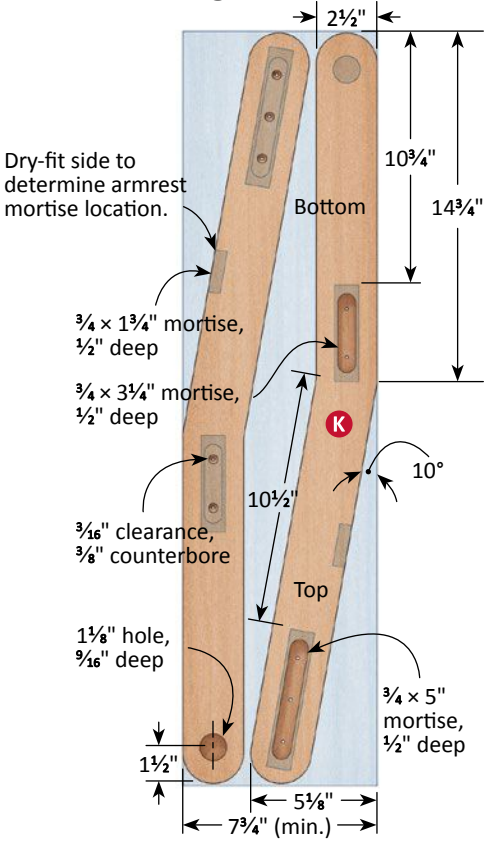
7 Referring to the **Front Leg Detail**, page 39, and **Rear Leg Detail**, lay out the mortises and centerpoints for the glider bearing and screw holes on the front and rear legs (I, K) and the mortises on the armrests (J). At the drill press, bore the 1⅛ × 9/16"-deep stopped holes for the glider bearings and the clearance holes and counterbores in the front (I) and rear (K) legs on the legs' outer faces. Remember that the leg assemblies are mirror images of each other.

8 Outfit your plunge router with an edge guide and ½"-diameter upcut spiral bit, and rout the ½"-deep mortises in the front and rear legs.

9 Align the armrest pattern against the back end and bottom edge of an armrest blank, and trace it on your stock. Repeat with the second blank. Referring to the **Armrest Detail**, page 39, lay out the tenon where shown.

10 At the tablesaw, cut the tenons on the front legs (I) and the armrests (J) (**Photo E**). Use a bandsaw or dovetail saw to trim the angled armrest tenon

Figure 4: Rear Leg Detail & Cutting Guide

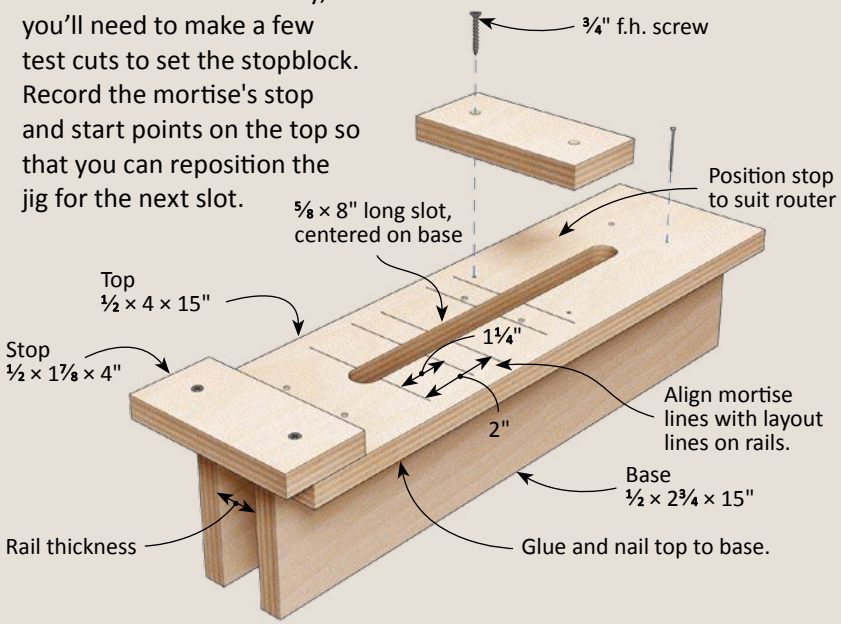


E

Set the miter gauge to 10°, and cut the angled tenons on the armrest ends.

Rail Mortising Jig

This simple jig guarantees straight, centered mortises. Because router bases vary, you'll need to make a few test cuts to set the stopblock. Record the mortise's stop and start points on the top so that you can reposition the jig for the next slot.



F

Clamp the jig's base in place, and then plunge-rout the mortises in both back rails.

to width. Now saw and sand the rounded ends of the front and rear legs and armrests. Put these parts aside for now.

Build the back

1 Mill the top rail (N), bottom rail (O), and front rail (P) from 5/4 stock. Mill the vertical splats (Q) and horizontal splat (R) from 4/4 stock. Cut the parts to the dimensions in the **Cut List**.

2 Referring to **Figure 5: Back and Splat Detail**, use your tablesaw, outfitted with a miter gauge and auxiliary fence, to cut ¾- thick × ½"-long tenons on both back rails (N, O) and the front rail (P). (Note: I rounded the ends of the tenons with a file to fit the mortises. Alternatively, you can square off the ends of the mortises with a chisel.)

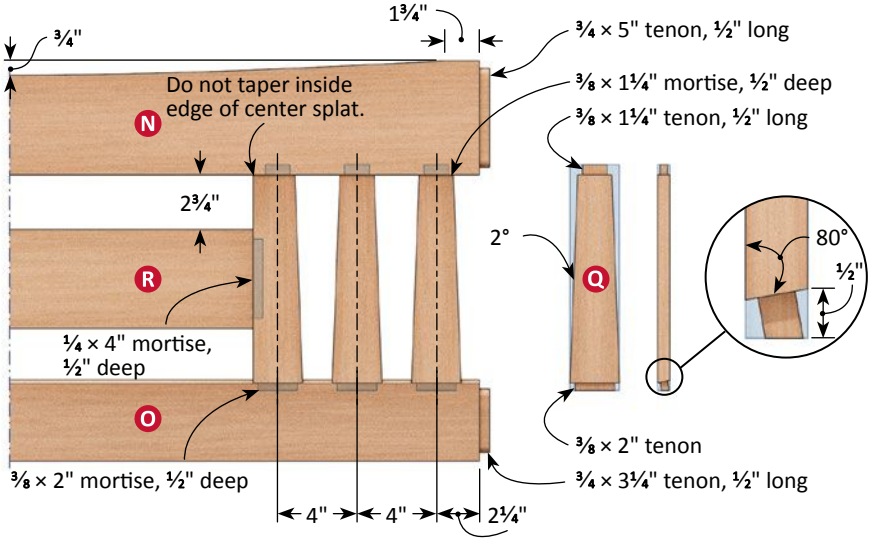
3 Clamp the top and bottom rails together face-to-face, and lay out the mortises on the inside-facing edges, referring to **Figure 5**, right.

4 Make the slot cutting jig shown above. Using a plunge router equipped with a ⅝" O.D. bushing and ⅜" upcut spiral bit, rout the mortises in the top and bottom rail, as shown in **Photo F**.

5 Using a thin strip of scrap wood, lay out the curve on the top rail (N) where shown. Bandsaw just outside of your line, and then sand smooth.

6 Cut the vertical splats (Q) to the dimensions listed in the **Cut List**. Referring to **Figure 5**, lay out the tenons along the top and bottom ends of one splat. Using a tablesaw and miter gauge, cut a ⅜ × 1¼ × ⅜" long tenon on the top end of each splat. Repeat with the remaining splats.

Figure 5: Back and Splat Detail



G

With the blade tilted to 10°, establish the shoulders on the angled tenons with a ⅛"-deep kerf. Use the edge cuts to position the stopblock.

H

Saw the front tenon cheeks with the splat placed against a sacrificial spacer and the blade height set to graze the tenon shoulder.

7 To cut the angled tenons on the bottom ends of the vertical splats, adjust your miter gauge to 10°, and cut a narrow tenon shoulder on one edge of each splat. (I used a stopblock on the rip fence to ensure this cut was exact.) Next, set the gauge to 10° in the opposite direction, rotate the splat so that the uncut edge touches the table, and cut the opposite shoulder.

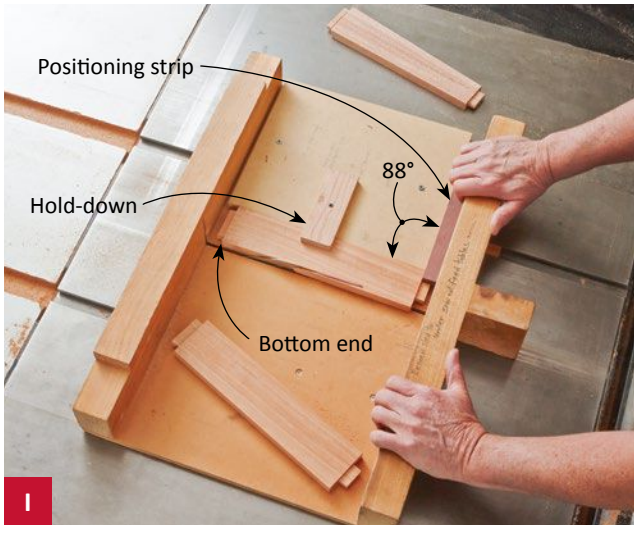
8 Adjust the blade's bevel angle to 80° (10° from vertical), and set the miter gauge perpendicular to the blade. Referring to the saw kerfs on the edges, set a stopblock and cut a ⅛"-deep kerf to establish a shoulder on one face of each splat.

9 Reposition the miter gauge on the other side of your blade, rotate the splat so that the uncut face touches the table, and reset the stop. Now cut the final shoulder, as shown in **Photo G**.

10 Without changing the blade angle, clamp a splat into a tenoning jig, and cut the rear cheek on all six splats. Now reset the jig and blade height, and cut the front cheeks, as shown in **Photo H**.

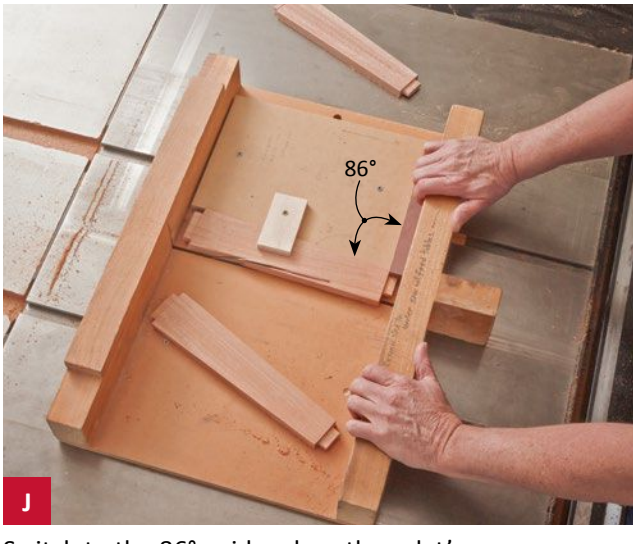
11 To taper the splats, make a pair of guides from two 9 × 12" pieces of ½"-thick plywood or MDF. Saw a 2° taper on the edge of one guide and a 4° taper on the edge of the other guide to create 88° and 86° corners, respectively.

12 Position the 2° tapering guide in a crosscut sled. Insert a shoulder-positioning strip between the guide and sled fence, and place a splat against the guide (top end toward you), with the shoulder resting on the strip. Locate the guide and splat so that the blade grazes the splat's back edge. Now taper one edge of each splat, as shown in **Photo I**. (Note: The two innermost splats are tapered on their outer edges only.) To make mirrored parts, cut the edge of one splat facedown, and the other faceup.



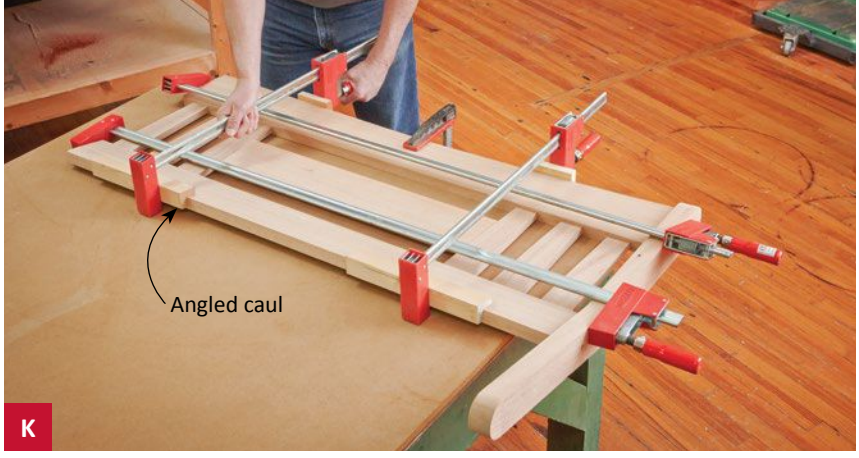
I

Place the splat against the positioning strip and one edge of the 88° corner on the first guide. Then taper the first splat edge.



J

Switch to the 86° guide, place the splat's tapered edge against the jig, and saw the opposite edges of the four outer splats.



Use a rear leg to keep the ends of the rails even and ensure the assembled back fits. Make a pair of 10° clamping cauls to direct clamping pressure across the back.

13 Position the 4° guide in the sled in the same manner, and cut the opposite tapered edges on the four outer splats (**Photo J**).

14 Cut the horizontal splat (R) to the dimensions listed in the **Cut List**. To join the horizontal splat to the inner splats (Q), I used my mortiser to cut the mortises in the splats. To do this, I set the vertical splats on a 10° wedge to accommodate the tapered edge, and then cut tenons on the horizontal splat to fit. (Alternatively, you can join these parts with a pair of #20 biscuits. Adjust the splat's (R) length accordingly.) Rout the long edges of the horizontal splat with a ⅛" round-over bit. Finally, glue the horizontal splat between the two inner splats.

15 Rout the edges of the rails (N, O) with a ¼" round-over bit and the splats (Q) with a ⅛" round-over bit. Finish-sand the rails and splats through 220 grit.

16 Dry-assemble the top rail (N), bottom rail (O) and splats (Q, R) using a leg to maintain the 10° angle of the bottom rail (**Photo K**). When you're confident that everything fits, apply glue to the mortises and tenons, and assemble the back.

Assemble the rest of the bench

1 Arrange the parts needed to make up both bench sides: the front legs (I), arm rests (J), rear legs (K), and seat stretchers (M). Position each stretcher between the appropriate front and rear leg pair, and mark its location. Referring to the **Front Leg Detail**, page 39, and **Photo L**, cut two #20 biscuit slots, 1¾" apart, in the back edge of each front leg and in each stretcher's front edge, so that the stretcher is flush with the inside edge of the leg. Cut a single biscuit slot in each rear leg and the back end of each stretcher.

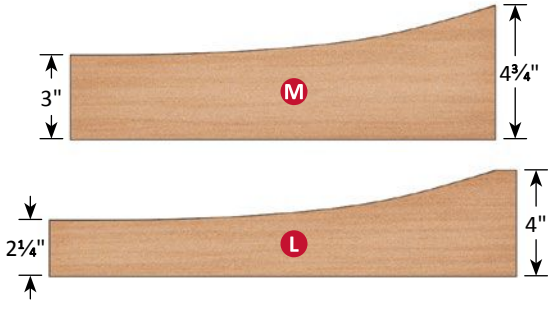
2 Dry-fit and clamp each seat stretcher (M) between its mating front leg (I) and rear leg (K). Position the armrests in place, and refer to the tenons to mark the locations of the mortises on the front edges of the rear leg (for the armrests) and on the bottom edges of the armrests (for the front legs). Using a plunge router equipped with a ½" upcut spiral bit and an edge guide, rout the ½"-deep mortises in the rear legs (**Photo M**), and the 1"-deep mortises in the armrests.

3 Test-fit the side assemblies (I, J, K, L). Round over the edges with a ¼" round-over bit, and then assemble, as shown in **Photo N**.

4 Glue and clamp the back assembly (N, O, Q, R) and the front seat rail (P) between the seat side assemblies.

5 Referring to **Figure 6**, below left, trace a fair curve along the top edge of the slat supports (L). Cut and sand to shape. (Note: Position the top edge of the slat support flush with the top edge of the front rail [P].) Drill

Figure 6: Seat Stretcher & Slat Support Detail



Use a pair of biscuits to attach the stretcher to the front legs. Trim the ends off the biscuits to fit the slot.

Setting a block alongside the leg prevents the router from tipping when routing the mortises in the legs and arm rests.

Using the same angled cauls you made to assemble the base, clamp the stretcher between the front and back leg.

pocket holes in both ends of each support, and attach them between the bottom back rail (O) and front rail (P) with glue and 1¾" pocket screws. Plug the holes to keep out moisture.

6 Mill the stock for the seat slats (S), but leave the slats ½" oversized in length for now. Rout the top edges of each slat with a ¼" round-over bit, as well as the bottom edge of the foremost slat. Now trim the slats to fit between the seat stretchers (M).

7 To space the slats evenly across the seat, measure the distance from the back rail (O) to the front edge of the seat rail (P), add ½" for an overhang, subtract the total width of the slats, and then divide by 7. (The gap should be about ¼".) Rip spacer strips to the calculated width, and position them between the slats. Mark across the positioned slats to identify the centerlines of the slat supports underneath.

8 Drill 3/16" clearance holes and ⅜" diameter counterbores into the slats along the slat support centerlines.

9 Fasten the slats (S) to the slat supports (L) using 1½" deck screws. (You'll need to partially disassemble the project for finishing, but at this point you can attach the seat to the swing arms and give your glider a test run.)

Mahogany Glider Cut List

	Part	Thickness	Width	Length	Qty.	Mat'l
A*	Base leg	1½"	3½"	18⅜"	4	M
B*	Top rail	1½"	3½"	22"	2	M
C*	Middle rail	1½"	3¾"	17⅞"	2	M
D*	Bottom rail	1½"	3½"	21⅛"	2	M
E	Stretcher	1½"	3¾"	56¾"	1	M
F*	Stretcher brace	1½"	2¾"	12½"	2	M
G	Swing arm	¾"	2½"	18⅜"	4	M
H	End block	¾"	2½"	2½"	8	M
I	Front leg	1½"	2½"	22"	2	M
J	Armrest	1½"	3"	22¾"	2	M
K*	Rear leg	1½"	5⅛"	31⅛"	2	M
L	Slat support	1½"	4"	16½"	3	M
M	Seat stretcher	¾"	4¾"	15"	2	M
N	Top back rail	1"	5¾"	48½"	1	M
O	Bottom back rail	1"	4"	48½"	2	M
P	Front rail	1"	4"	48½"	2	M
Q	Vertical splats	⅝"	2½"	11½"	6	M
R	Horizontal splat	½"	5"	25¼"	1	M
S*	Seat slats	¾"	2⅜"	47½"	5	M
T	Corner bracket	¾"	3¾"	9½"	4	M
U	Support block	¾"	3"	5"	4	M

*Indicates that parts are initially cut oversized. See instructions.

Materials: M= Mahogany

Finishing touches and assembly

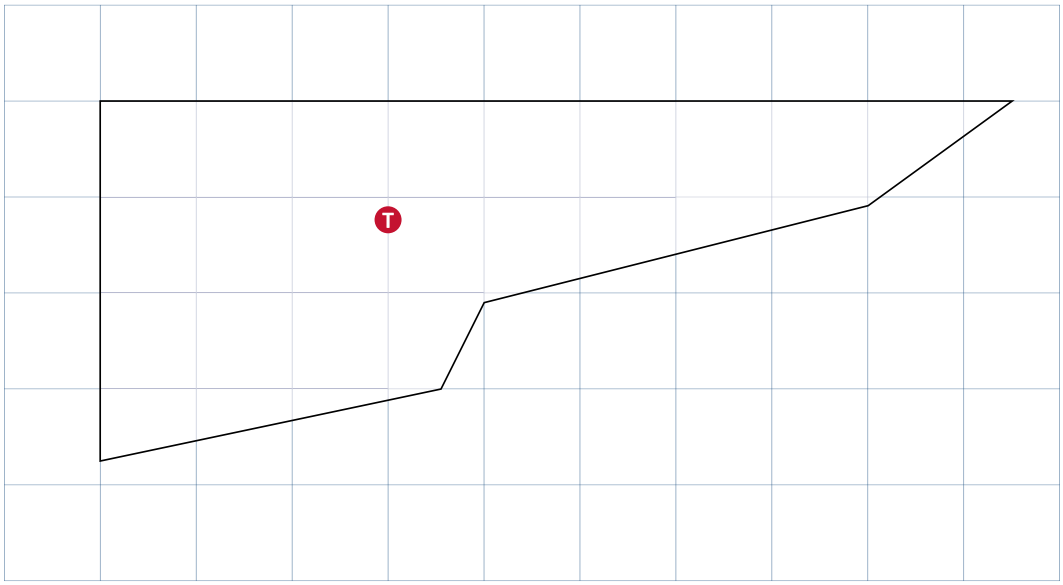
1 Disassemble the bench and base from the swing arms and remove the swing arm hardware.

2 Using a drill press and ⅜" tapered plug cutter, cut wood plugs from remaining stock.

3 Working one section at a time, select a matching plug, apply a bit of glue in its hole, align the grain on the plugs with surrounding grain, and then lightly tap the plug in place. After allowing time for the glue to dry, saw or rout away the bulk of the excess material, and then sand the plugs flush.

4 Using the **Corner Bracket Pattern**, page 45, make a full-sized pattern, and trace four bottom brackets (T) onto ¾"

Figure 7: Corner Bracket Pattern



1 Square = 1" For full-sized patterns, visit woodcraftmagazine.com.

stock. Make four support blocks (U). Saw and sand the brackets to shape, and then glue them to the front and back rails where shown in the **Bench Exploded View**, page 39. Center the support on the rail/bracket joints to reinforce the joint.

5 Finish sand the glider through 220 grit. (Provided that you cleaned up the subassemblies as you worked, this step should go quickly.)

6 To protect the mahogany from the elements, I applied seven coats of Epifanes Marine Varnish. As per the instructions, I thinned the first coat 50%, and used less thinner (about 10% less) with each subsequent coat until approaching full-strength. After each application, wait 24 hours, scuff-sand, and then wipe off any dust before applying the next coat.

7 Attach nylon gliders to the legs. (The spacers will keep the legs out of standing water and make the piece easier to move.)

8 To reassemble the glider, first reattach the glider bearings to the base's top rails and to the bottoms of the front and rear legs. Next, slip a washer and nylon bushing onto each exposed bolt on the top rails, and then attach the swing arm to each bolt with a washer and ⅜" nut. Finally, carefully set the bench on the base's stretcher, slide the washers and nylon spacers onto the leg bolts, and then attach the swing arms, followed by washers and nuts.

9 Pour yourself a glass of iced tea and give your new glider an inaugural swing. ■

About Our Author

Brian Stauss resides in Indian Springs, Alabama, has been woodworking for over 35 years, and has been a member of the Alabama Woodworkers Guild since 2002. In addition to serving as the webmaster for the Guild, he serves as a workshop supervisor and teaches classes to other members.

Special thanks to the Alabama Woodworkers Guild for the use of their Education Center and Shop for the photo shoot.

Convenience-*PLUS* BUYING GUIDE

☐ 1.	Glider Bearing Hardware Kit	#160294	$39.99
☐ 2.	⅝" OD × 1 7/32" ID Bushing	#144692	$8.09
☐ 3.	Bushing Lock Nut	#144696	$3.79
☐ 4.	Freud Upcut Spiral Router Bit, ⅜"D, 1¼"CL	#828779	$51.47
☐ 5.	⅜" Hex Drive Plug Cutter	#830818	$15.99
Above items are available at Woodcraft stores, *woodcraft.com* or by calling (800) 225-1153. Prices subject to change without notice.			
☐ 6.	Epifanes Marine Varnish, quart, *www.amazon.com*		$40.85

Hardware: (8) ⅜-16 × 2" bolt; (8) ⅜ × 1" nylon spacer; 2½" deck screws 1½" deck screws; (8) 1" dia. furniture slide glides.

How to Air-Dry Lumber

Turn freshly cut stock into a cash crop of woodworking woods.

By Dave Boyt

Because of the waiting time, air-drying your own lumber may not meet the needs of woodworkers who want to go to their hardwoods supplier and exit with a stack of project-ready boards. On the other hand, you may find the process both cost-effective and fun. In fact, air-drying is something every practical woodworker should consider when that big oak, walnut, or maple tree keels over in the yard, and the tree guy asks what you'd like done with the wood. Rather than watch the logs being reduced to firewood and mulch, a woodworker can save big by having the wood slabbed and then drying it himself. Understanding the pros, cons, and costs of air-drying can make the effort worthwhile for woodworkers lucky enough to hook up with a local sawyer.

Other than cost savings, sawing up and air-drying your own lumber gives you more freedom of choice. While the available supply of kiln-dried and surfaced wood may be limited in terms of size, selection, and species, harvesting and air-drying lumber may expand your horizons, allowing you to procure unusual species or wood with highly appealing figure. You may even capture that special wide slab you always wanted for a dining table top.

After the machines stop and the sawyer leaves, when there is just you, a pile of sawdust, and a great yield of awesome boards cut to suit, that's your cue to move to the drying stage. It's not difficult, but it does require an understanding of what happens to wood as it dries. It requires planning...and patience. Here, I'll help you make the right drying decisions so you can reap the savings as well as an enviable supply of usable lumber.

Harvesting Homegrown Woods

If you're interested in felling selected trees on your property and having them sliced up for drying, see the companion story "Harvesting Backyard Exotics" in the Oct/Nov 2014 issue of *Woodcraft Magazine*, No. 61.

Why dry wood?

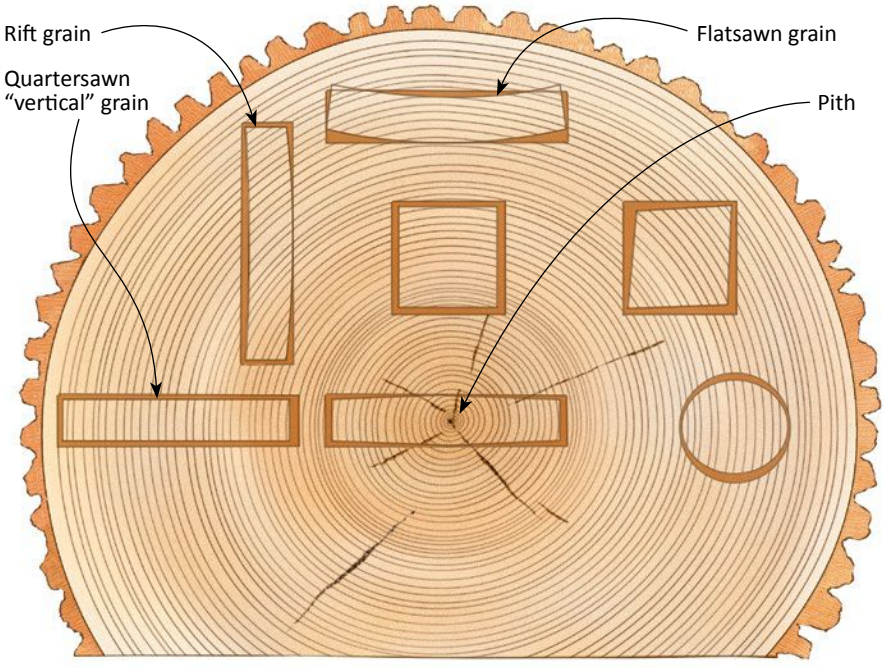
When first milled, over half the weight of a board is water. As wood dries, the cells shrink roughly 10% in diameter, but only about 0.1% in length. This varies somewhat by species–and even in the same board, depending on its location in the tree (see **Figure 1**). This means that a 1"× 8"× 8' board fresh from the mill, will shrink to roughly ⅞" × 7¼" × 8' long as it dries. Even the most carefully fitted joint can open up, crack, and possibly fall apart if built of "green" lumber. While the old-time woodworkers may not have understood the exact mechanism for wood movement, they came up with innovative ways to deal with it that we use today. Frame and panel doors, trestle tables, and post and beam construction are all designed to allow wood to move without coming apart. When you see a sprung joint or cracked part in a piece of furniture, you can pretty much finger the culprit. Another problem with green wood is that most adhesives require dry wood for a reliable bond. Bottom line: proper, controlled drying avoids a host of problems that crop up in the natural world of wood, resulting in stable project stock.

The air-drying/ kiln-drying combo

Air-drying lumber is an inexpensive and easy way to get the wood down to a usable moisture content (MC) for most projects. The downside: you have to wait a year or longer. In fact, many woodworkers keep a five-year supply of wood. Of course, this takes up real estate, so you'll need room to store the wood. Even then, it may take another six months in a humidity controlled environment to finish drying the wood to kiln-dried levels.

If you are in a hurry to get your wood down to its final "indoor" MC, consider kiln-drying to finish it off. Doing this will still save you money. Some sawmills also operate a drying kiln service. (Ask your state forestry or wood products association for a local contact.) You may also find one online through a web search. The cost varies, but is typically around $.25 per board foot, though smaller orders may cost more due to handling. Note that moving your wood around can be labor-intensive.

Figure 1: Profiles in Shrinkage



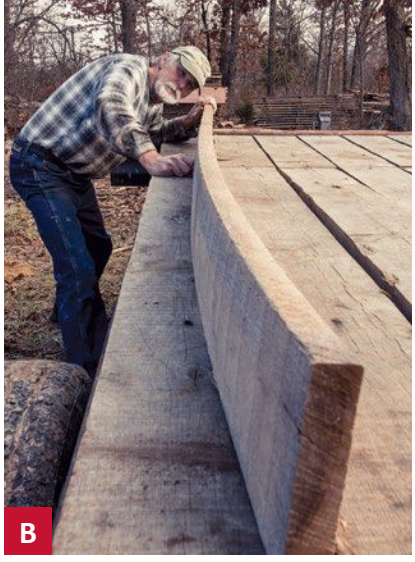
Stock sawn in a variety of shapes and from different parts of the log will shrink and distort in unique and predictable ways. Quarter "vertical" grain or quartersawn pieces provide the most stable and truest results.

Source: U.S. Forest Laboratories

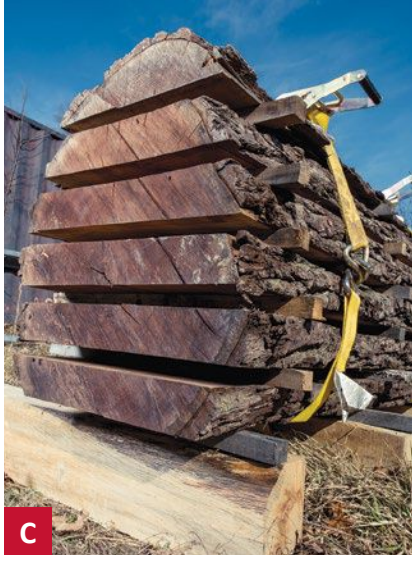
Defects and preventions

Fungus is probably the most over-looked drying defect in wood. It is responsible for discoloration such as blue stain (as well as spalting). If the boards are "dead stacked" with no air space between layers, fungal

Cupping occurs when shrinkage causes the board edges to curl in the opposite direction of the annular rings.



Drying boards can bow from one end to the other if left unrestrained.



Strap pressure and properly placed stickers can restrain boards in a stack from warping.

Board ends crack when they dry out significantly faster than the rest of the board.

stain can be noticeable in as little as two days. This is why it is important to have all your materials and plan for drying before you get your boards and then to stack your boards for air-drying right away.

One of the characteristics of wood is that it shrinks and swells differently throughout. This is called *anisotropic shrinkage*. As mentioned earlier, wood moves very little in length, but as much as 8% tangentially to the grain and 10% perpendicularly to the grain (**Figure 1**). When some pieces have significant tangential and perpendicular grain movement, you may encounter all sorts of havoc when drying the wood. For example, wide boards may cup and bow, depending on the grain (**Photo A** and **Photo B**). Avoid the problem by using strap clamps, as shown in the European-style stack of boards in **Photo C,** and by using weight, as shown in **Figure 3**.

"End checking" is another common drying defect (**Photo D**). The cells of wood are like straw, allowing moisture to exit more quickly from the ends of the log than from the faces and edges. Since the ends are drier, they shrink more, and the resulting stress causes cracks that may go several inches into the board. Many woodworkers simply trim off the split board ends, but a much better solution is shown in **Photo E** to slow moisture movement.

"Crook" describes a board that bows from end to end along the edges. It is usually caused by the center of the growth rings (pith) near the edge of a board. The "juvenile wood," within a half-inch of the pith, has different shrinkage properties than wood added later in the tree's life. If the pith is off center, the board will crook or bend sideways (**Photo F**). If the pith is centered, the board will usually crack right down the middle. You can salvage the good wood by cutting away the pith.

Apply several coats of latex paint or "Anchorseal" on board ends soon after the tree has been cut to reduce end checking.

The off-centered pith in this board caused it to both crook and crack.

Pouring water on drying myths

Proper drying can become a rewarding part of the woodworking experience. But myths about the process need to be exposed and dispelled:

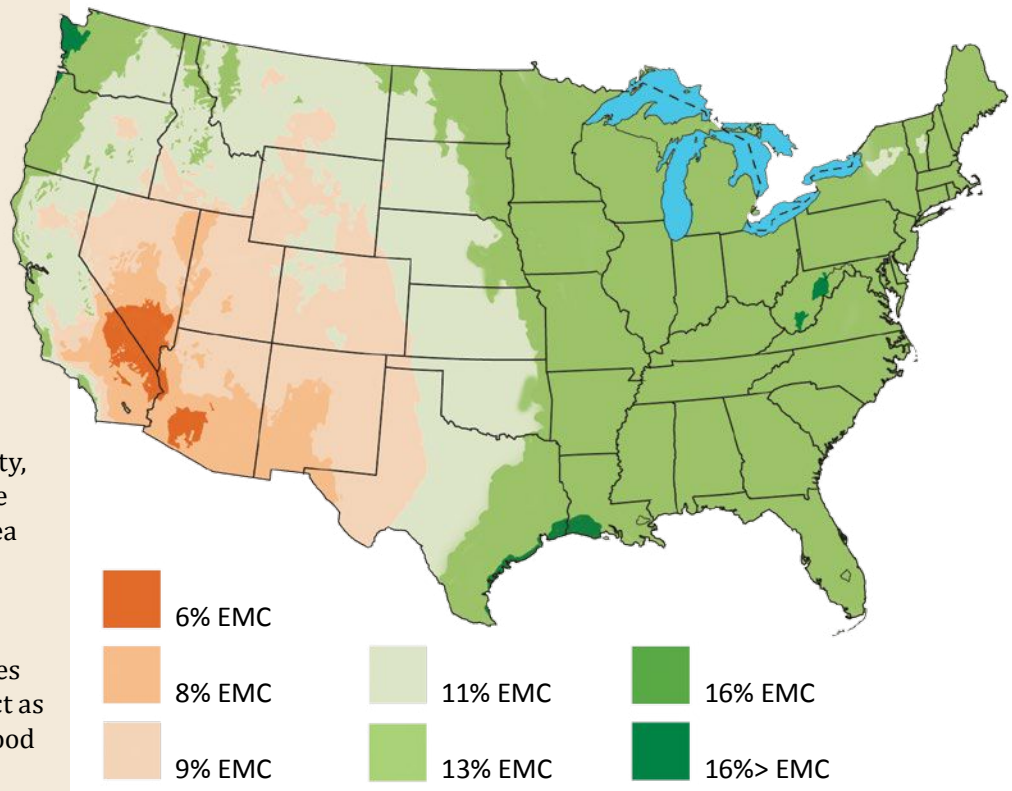
- **Kiln-dried wood does not shrink or swell.**

False. Wood is a dynamic material that responds to changes in humidity. Kiln-drying does not change this. When exposed to high humidity, the wood will absorb moisture from the air and swell. The idea behind kiln-drying is to bring wood to the *average* moisture content it will encounter in its intended environment. Finishes such as varnish and lacquer act as barriers to moisture so the wood does not move appreciatively with seasonal variations in humidity (dry in the winter, humid in the summer), but do not totally seal the wood. Drawers that are loose in the winter, but stick tight in the summer, serve as a perfect example.

- **Given time, air-dried stock results in the same MC as kiln-dried stock.**

Wood is constantly equalizing its MC to the relative humidity of its environment. (See **Figure 2**.) A stack of wood in Phoenix, Arizona, will air-dry to a lower MC than it would in Seattle, Washington. In most places, wood will air-dry to around 12% MC. This is a big improvement over green lumber, but it will shrink another 2% or

Figure 2: Average Air-Dry Moisture Content



EMC = Equalibrium Moisture Content

Source: U.S. Dept. of the Interior

width and thickness when it is brought indoors where the average humidity will bring the MC down to 8%. To get to that level, wood needs to either be kiln-dried or stored in a dry environment to equalize out.

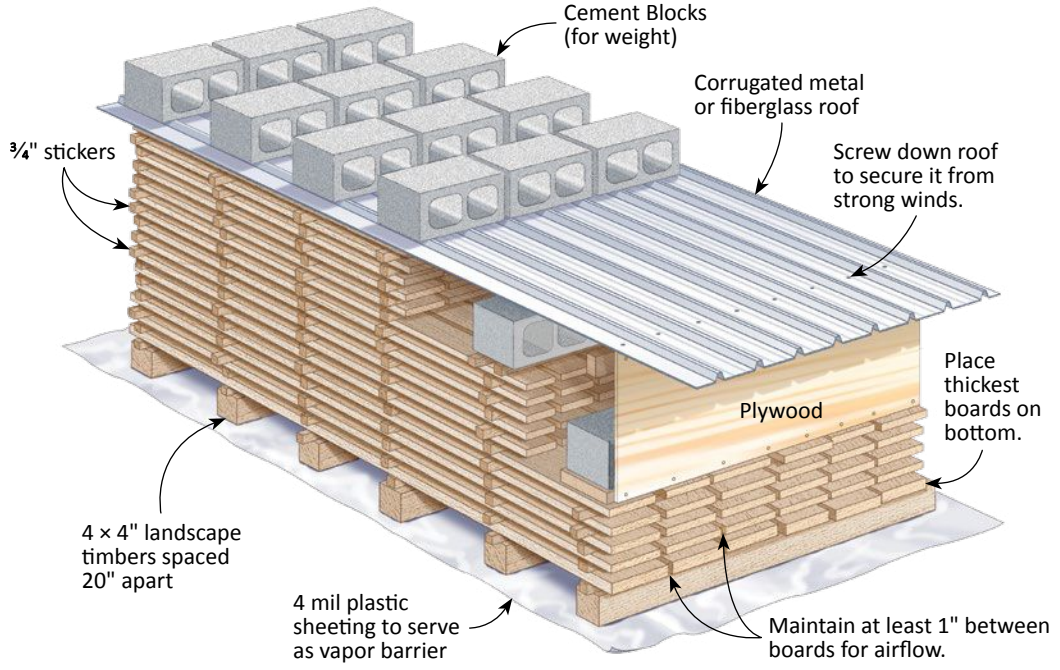
- **One year of air-drying per inch of thickness is optimal.**

True, but .... Wood will reach an equilibrium air-dry MC (or EMC) at that rate, but it will continue to lose moisture and shrink when brought indoors. The thicker the wood, the longer the drying time. (See "Monitoring the Stack," page 51.)

- **Air-dried wood contains no internal stress.**

False. Air-drying lumber over time can help reduce stress in boards. This is not so much the case with kiln-dried stock where commercial kilns must dry lumber as quickly as possible. However, the wood may still contain stress created by the way it was cut at the mill. (See "Defects and Preventions", page 47.) Stress also forms while the tree grows. Its boards may move (warp) during the drying process and move again during machining. Also, the color of air-dried lumber remains truer than that of kiln-dried stock.

Figure 3: Building a Conventional Air-Drying Stack



Materials List:

1. 4 × 12' plastic sheet
2. 4" × 4" × 4' landscape timbers
3. 8" × 8" × 16' cinder blocks (for weighting the stack down)–or 2" wide ratcheting straps in lieu of weights
4. ¾"-1" square wood stickers 4' long between board layers for air circulation
5. 2" wide ratchet straps (for stacking boards in the order cut as in the European-style log stack **Photo C**)

Building your air-drying stack

Now that you understand how and why wood moves, let's build a proper stack for air-drying. Start by selecting a functional location on solid ground. It should be level, protected from sun and rain, and provide good air circulation. An open shed or outside area with a metal roof over the top is ideal.

To dry a quantity of lumber containing 1" and thicker boards from 6" to 10" wide and 6' to 10' long, follow the procedure below to build a proper stack using the materials shown in **Figure 3**.

Put a sheet of heavy (at least 4 mil) plastic on the ground to keep moisture away. Then lay out the landscaping timbers to raise the stack off the ground by at least 4" to 6". For 1" thick boards (4/4), the timbers should be about 20" apart to keep the boards from sagging. They need to form a flat surface, as the boards will conform to the timbers as they dry. Next, lay a sticker along each landscape timber.

If the boards vary in length, start the stack with the longest ones. Put the slower drying boards (thicker or slow-drying species) on the bottom, since they'll be the last ones to be ready for use. I recommend identifying the species with a tag, so they will be easy to sort after they air-dry. Leave an inch or two of space between the boards for good air circulation by using

Dealing With Bugs

Insects cause major damage to lumber, often reducing beautiful boards to something resembling Swiss cheese. Beetles are among the worst offenders. There's not much to be done after the wood has been infested, other than call it "character." But there is a much larger issue with insects. Once brought into your shop or home, they may develop a taste for other wood. Powder post beetles are particularly difficult to deal with, as they bore into exposed wood, leaving a little mound of wood powder under their holes. Once this happens, you may need a professional exterminator to fumigate your stack or shop.

The best way to deal with bugs found in your air-drying boards is to cook them in a kiln. According to the U.S. Forest Products Lab, raising the temperature to a minimum of 135° F for at least 90 minutes will kill all bugs in a board up to 2" thick. If you can't turn up the heat, consider chemical warfare. Other measures include fumigation and the use of borax treatments, such as BoraCare and TimBor (found at home centers and online). Both are nontoxic to humans and pets. Using a sprayer, apply either product to the wood's surfaces, and the bugs will die when they chew their way out.

stickers/spacers of the same thickness. Align the stickers vertically so they transmit the weight of the stack straight down to the ground. Having a second person makes stacking easier, since it allows you to each take an end of the board and set it straight down without moving the stickers. Go as high as you safely can. I stop at 6'.

With a stack that is out in the open, do what you can to keep the rain and sun off, while allowing good air circulation. Whatever cover you use should sit on a layer of stickers to allow air to flow over the top of the stack. If this is a one-time proposition, overlap some scrap lumber on the stack to shed water, and strap or weight it down. Metal roofing, like the kind you get at a home centers, is better. Then comes the hard part...waiting.

The European style involves stacking slabbed wood (with one or both edges left natural) to reconstruct the log (**Photo C**). This allows the craftsman to select matching grain and create book-matched tabletops. The same drying principles apply to this stacking approach. Once the stack is assembled, put a couple of ratcheting straps on it to keep it from warping badly. Once a week or so, tighten down the ratchet straps. They tend to loosen some as the wood dries and shrinks. The top slab protects the stack from rain, and the edges naturally shed water. Unlike conventional stacking, it is not an efficient use of space.

Monitoring the stack: Are we there yet?

Though wood air-dries one year for each inch of thickness, this does not take into account drying rates based on the season, climate, and time of year. Air-drying only brings the wood down to an MC that corresponds to the average outdoor relative humidity, though it does respond to seasonal humidity changes. After a long, dry summer, it may pick up moisture in the fall. Species such as walnut and poplar have a porous structure that allows them to dry more quickly than white oak or maple.

For many projects, such as rustic furniture, air-dried stock (around 12% MC) is good enough. If the design allows for shrinkage without damaging the wood or causing joints to loosen, you can use air-dried lumber. But for fine furniture, musical instruments, and other less tolerant projects, consider kiln-drying the wood or drying it in your heated shop to bring it down to around 7% to 8%. You can do this at any point in the drying process. Drying wood in the shop, however, requires space, a fan to circulate air, and monitoring the MC. Once the boards hit EMC, they're ready for use.

For accurate monitoring, invest in a good moisture meter when air-drying wood (see the one I used in the buying guide). It lets you keep track of the MC of the wood you dry as well as the wood you buy. Pin-type meters (**Photo G**) measure the change in electrical resistance as wood dries, but are generally only accurate after the MC falls below the fiber saturation point (around 30%). They range between $50 and $300. The better ones compensate for temperature and species, and have wired probes for monitoring MC at several places in a lumber stack. These wires are left in the boards for the duration of the drying process.

Pinless meters are more expensive, but take a reading by holding one against the wood. They lack probes that could mar the wood. ■

G

Press the points of the pin-type moisture meter into the wood at least a foot down from a board's end to register a reliable reading.

Convenience-*PLUS* BUYING GUIDE

☐ 1.	Anchorseal 2 Green Wood Sealer, 1 gal.	#150809	$24.50
☐ 2.	Lignomat Mini-Ligno E/D Moisture Meter	#150259	$119.99

Above items are available at Woodcraft stores, *woodcraft.com* or by calling (800) 225-1153.
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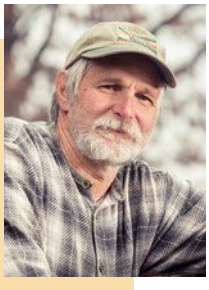


About Our Author

Dave Boyt has run a portable sawmill business for 12 years in Neosho, Missouri, specializing in sustainably grown and salvaged timber. With degrees in forest management and wood technology, he competently manages his family's tree farm, producing walnut, oak, and other hardwoods. He also serves as the managing editor of *Sawmill & Woodlot Magazine*.

Turning a Calabash Bowl

Master the tricks for working green wood.

By Mike Mahoney

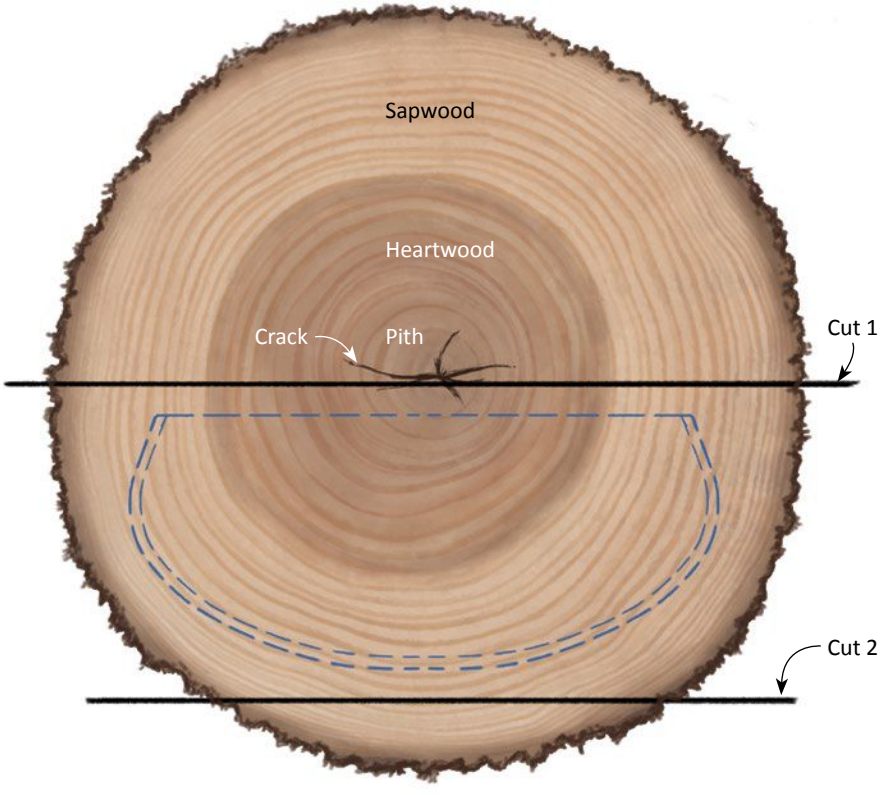
Many people ask me if the wood I make bowls from is green wood. The answer is always "yes." However, there's more to the story. In order to make large bowls, you have to start with a green piece of wood. That's because it would be rare to find a dry piece, say, 5" thick × 12" wide that does not have a crack in it. (Such cracks in salad bowls make them filler for the rubbish bin.) So the trick is to take the green blank, rough it into a bowl shape that is 10% as thick as the diameter, seal it with an appropriate sealer, and store it away for slow drying. Later, after the rough bowl has fully seasoned, you turn it to final shape and wall thickness. The downside here is the painfully long wait; rough-turned bowls take from months to over a year of drying time.

However, there's another way to work with green wood and make very handsome bowls *without* going through the interminable drying process. That is to turn what I loosely call a "calabash bowl." This is a Polynesian term for a gourd. It is essentially a baseless bowl carefully extracted or cut from the log to create a visual balance after the bowl has dried. In my

opinion, bowls generally do not need bases to be functional. Another reason: if you make a traditional based bowl from green wood, it usually will not sit flat after it dries. So, let's make a calabash and explore the joy and secrets of green wood turning.

Note: For my green wood calabash, I choose a variety of white oak (Quarcus lobata), known as a California Valley oak. Oak is a good choice since you can find it throughout North America. Plus, due to its difficulty in drying, the woodturning community shies away from it for their seasoned turnings. For me, white oak for bowls (especially a calabash) is underrated. Its medullary rays can look stunning!

Figure 1: Log Sawing Sequence



Creating the blank

1 Start with a fresh round log about 14" in diameter and at least 14" long . (I'm using one I cut from a windfall tree on a vineyard near my farm.) Select a cylinder-shape log that doesn't have knots or other defects. Now, study both ends of the log, noting the pith and any radiating cracks that may affect the bowl blank. Avoid including the pith (the log's center) in the bowl. Mark a cutline with a black marker on the log's end so its annual rings and sapwood will be balanced evenly in the finished piece. (See **Figure 1, Cut 1**.) This also helps in the drying process.

2 Chainsaw the log almost in half where marked (**Photo A**), splitting it through the pith. That way, the log still sits firmly on the ground for **Cut 2**. If uncomfortable using a chainsaw, split the log at a bandsaw using a right-angle sled. (See the sled in "Harvesting Backyard Exotics" in the Oct/Nov 2014 issue, page 33.)

3 Cut a flat on the bottom of the log (**Cut 2**) so the blank will sit flat on the bandsaw (**Photo B**). Finish cutting the log in half.

Photos: Mike Mahoney; Illustrations: Charles Lockhart

C


D

4 Make a round hardboard or plywood template the diameter of the desired bowl. (While every bowl blank will be a different size, this one is 6" high and 14" across). Mark the template's center and the center of the half log's top face. Secure the template by driving a nail through its center and into the log's center.

5 Rest the log half on the bandsaw table and cut out the blank, running the blade along the edge of the template as you rotate the blank (**Photo C**). Note: For the best results, I use a ½" × 3 TPI (teeth/inch) blade.

6 Remove the template, and, using a drill, bore a ⅜" hole 1¾" deep into the blank's nail hole to accept a screw center (**Photo D**). Work to keep the bit at a right angle to the blank's face.

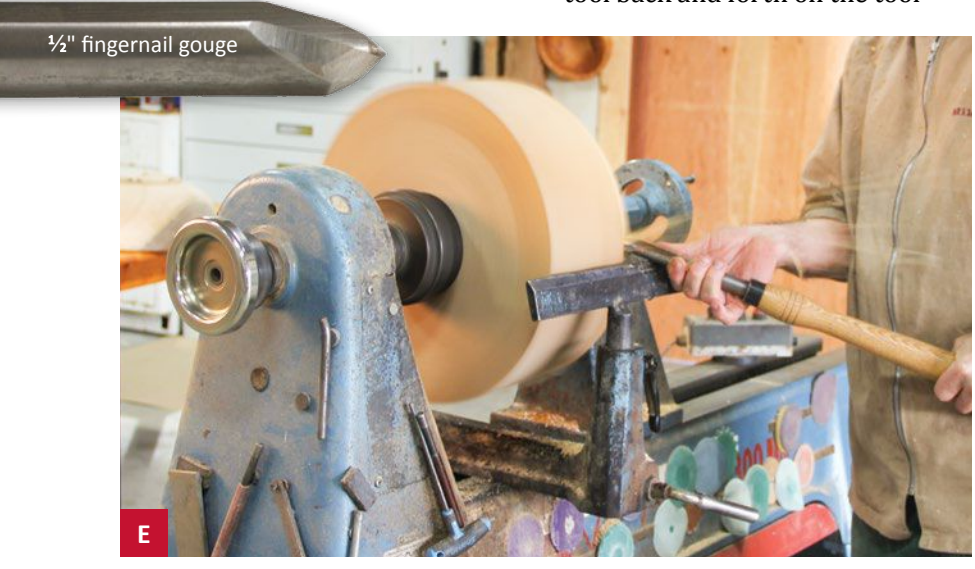
Mount the blank and turn the outside

1 Install a four-jaw chuck onto your lathe's headstock, and tighten a screw center into it. Install a live cup center into the tailstock. Now, screw the blank onto the screw center, and bring up the tailstock to secure the blank.

2 Now, with the lathe running at 800 rpm, use a ½" bowl gouge with a fingernail grind to round the blank (**Photo E**). Move the tool back and forth on the tool rest while riding the bevel. Note that when turning fresh green wood there will be water spraying from the blank as it spins. This is part of the fun. The moisture keeps your tool cool and is not as abrasive on the tool's edge as seasoned wood. For safety, I stand forward of the turning as shown.

3 Next, angle the tool rest and begin shaping the bottom of the bowl by removing the waste wood, using a ½" bowl gouge (**Photo F**).

4 Form a ¼" tenon on the bowl's bottom to fit in your four-jaw chuck (**Photo G**). To perform this step safely, make the tenon around 40% of the diameter of the bowl blank if possible.



E

Safety Note: There is a lathe speed formula by the late Utah turning teacher Dale Nish that he used to help students turn safely; I recommend it here. It goes like this: The diameter [of the turning] x rpm should equal between 6000-9000. For instance, if you have a 10"-diameter piece and your lathe is spinning at 1000 rpm, you are at 10,000, and over the safety limits for that project.

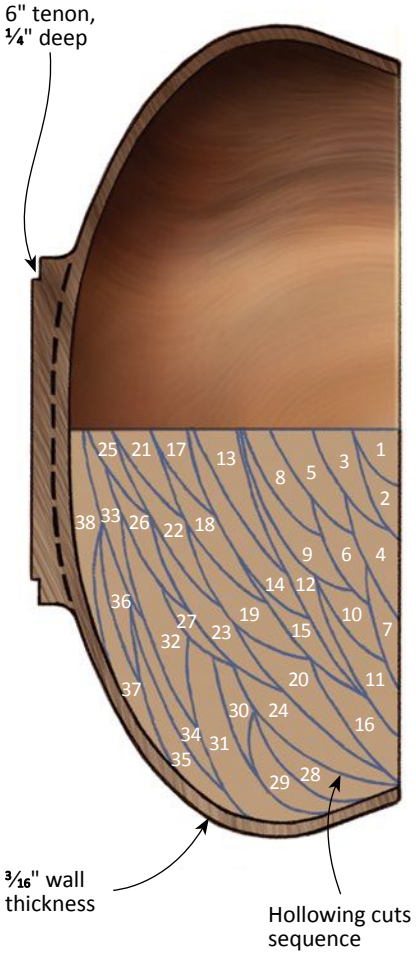
Here, the tenon is about 6" for the best possible grip. (See the buying guide for the chuck and jaws needed. If using a smaller chuck jaw opening, make sure that the blank size is one you can safely handle.) I turn the tenon with a ⅜" fingernail spindle gouge. Its deep grind makes it suitable for detail work. I shape the tenon so it is at a right angle to the bowl bottom, which is flat at this point. This lets the face of the chuck fit snugly against the flat bottom.

5 With the bowl blank held firmly in the chuck and the tailstock still in place, true up to the finished calabash shape (see **Figure 2**), using a series of shear scrapes. I try to make a typical calabash shape that is slightly enclosed to create a pleasing look after it dries.

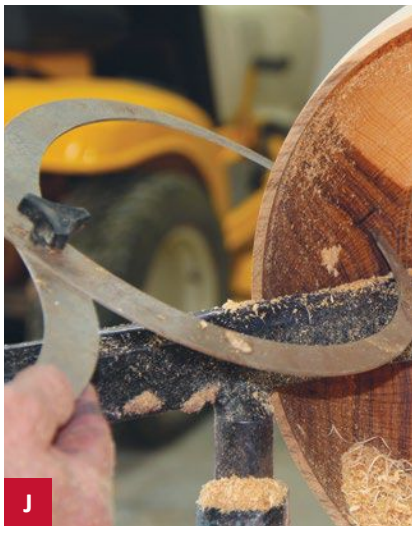
Turn the inside

1 Remove the tailstock and fit the tenon in the four-jaw chuck on the headstock. Locate the tool rest so that it is parallel to the top face of the bowl blank and just below center. Now, flatten the face with a ½" bowl gouge. Then, begin to hollow the interior of the bowl with the gouge (**Photo H**). Start near the center of the blank, and take a series of cuts, working from left to right in the order in **Figure 2**. Make

Figure 2: Hollowing the Calabash




I


J


K

deeper and deeper cuts until most of the bulk is removed. I carefully leave more bulk at the bottom of my piece so I can make cuts on the upper portion of the bowl without losing structure to make those cuts.

2 *Note: At this point, you want to establish the wall thickness. Since this is a green-finished bowl, aim to cut the walls evenly and relatively thin to help with the drying process. Uneven walls and thick wood invites cracking during the drying process.*

Using a ⅜" bowl gouge, establish a wall thickness of 3⁄16" as shown in **Photo I**. To do this, I cut down from the rim one third of the depth of my bowl and stop. Now, make sure you are cutting the wood evenly and cleanly. If you like what you see, cut the next one third down until you blend that with the first third. Proceed to blend in the bottom one third. I'll use a ½" bowl gouge that has been traditionally ground to finish this task. That's because the grain direction changes from the sides to the more end-grain-like wood at the center, which the traditional grind handles better than a fingernail grind.

3 Remain very conscious of the depth of the bottom. I make that judgment by eying the outside shape and determining where the outside bottom will be. Since I am shooting for a 3⁄16" wall thickness, I make the inside 3⁄16" from my perceived exterior's bottom. I also want a continuous flowing curve on the inside that mimics the exterior shape. This takes patience and thoughtful measuring with a caliper throughout the process (**Photo J**).

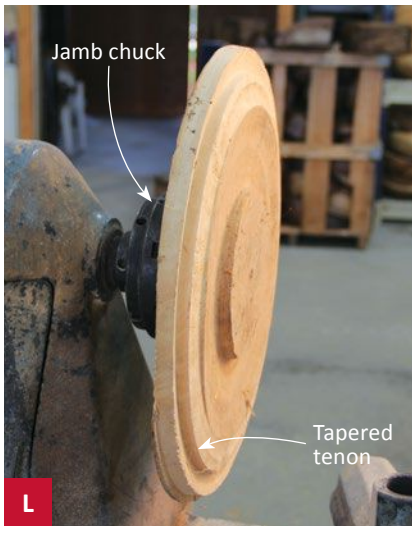
Sand and complete the calabash

1 With the tool work done for now, it's time to sand your calabash. I use 3"-diameter Mirka Abranet mesh sanding discs attached to a 3" foam pad accessory for a portable drill. (I prefer Abranet over traditional sandpapers because the mesh abrades green wood faster and smoother. I also protect myself from sanding dust with a respirator.)

2 Before sanding and with the piece stationary, carefully examine the surface areas that have torn grain or tool marks. Then, with the lathe running at 500 rpm, sand the bowl's inside surface, as shown in (**Photo K**). Once you smooth out the troubled areas, spin the piece and sand over the entire surface inside and out. I start with 120 grit and sand through 400, going over the inside and outside surfaces within reach. Carefully clean the bowl with compressed air between sanding with each grit. Don't overheat the wood during this process. Green wood can create heat-checking, which can ruin your project. Apply the sanding mesh lightly to the wood, and replace the discs as soon as they lose their cutting/sanding ability.

3 Next, remove the finely sanded calabash from the lathe and make a jamb chuck from a piece of scrapwood that you screw on to a faceplate (**Photo L**). Using a ⅜" spindle gouge, cut a ⅜"-long tapered tenon on the jamb chuck that fits snugly inside the rim of the completed bowl. Test-fit the bowl to get the size just right.

4 Further secure the bowl by holding it in place with the tailstock and live cup center. Then, finish shaping the bottom of the bowl (**Photo M**). Sand as before. Remove the tailstock and take some delicate cuts to



trim off the last bit of wood at the center. Sand the area. This approach will let you give your baseless bowl better balance when it rests on the table.

Dry the calabash and apply a finish

Note: While you dodge months of drying by turning a calabash, a little careful drying is still critical. And, since oak is particularly hard to dry, you need to slow the process down at this point.

1 Place the bowl in a thick paper sack from the grocery store and leave it in a cool dark place for a few days to a week. Since the piece is thin-walled, it should be dry by then. If you have a sensitive scale, one way to know is to weigh the bowl after a day or two and keep weighing it until it stops losing weight. You could also use a moisture meter provided you don't mar the surface.

2 Finish the calabash once it is dry. Notice how the dried calabash has warped. It has moved into an organic shape that is very pleasing to the eye. To finish the piece, first determine how you see it being used and the wood's color. If I am making a decorative calabash, I go with a tung oil or shellac. If the wood is a light color, I avoid these finishes since they may go yellow over time. Gloss polyurethane works well on a lighter wood. I see the bowl I turned here as a utility item and will therefore use a penetrating oil finish like walnut oil. Penetrating oils are better for utility items since there is no film to harm while cleaning. Also, penetrating oils require no skill to apply and can be restored by anyone. Once the finish dries completely, put your calabash to work. ■

About Our Designer/Builder

Mike Mahoney has been a professional bowl maker since graduating from San Diego State in 1998. His bowls can be found in galleries across the country. His main production items are salad bowls, burial urns, hollow forms, treenware, and any job that walks through the door. In addition to having created a line of woodturning finishes, he has taught turning in eight countries and in almost every state. For more on Mike, go to *bowlmakerinc.com*.

Convenience-*PLUS* BUYING GUIDE

☐ 1.	Nova Titan Chuck, 1¼" × 8 TPI	#153659	$269.99
☐ 2.	Nova 130mm Jumbo Jaws	#126358	$69.99
☐ 3.	Robert Sorby ½" Bowl Gouge, Full-Sized	#06O54	$98.99
☐ 4.	Robert Sorby ½" Fingernail Bowl Gouge, Full-Sized	#126944	$98.99
☐ 5.	Robert Sorby ⅜" Fingernail Bowl Gouge, Full-Sized	#126943	$80.99
☐ 6.	Mirka Abranet Sanding Discs, 3"-Dia., 80-600 Grit Assortment	#153663	$26.99
☐ 7.	Woodcraft HL Pad, 3" Dia., ¼" SH	#152802	$17.99

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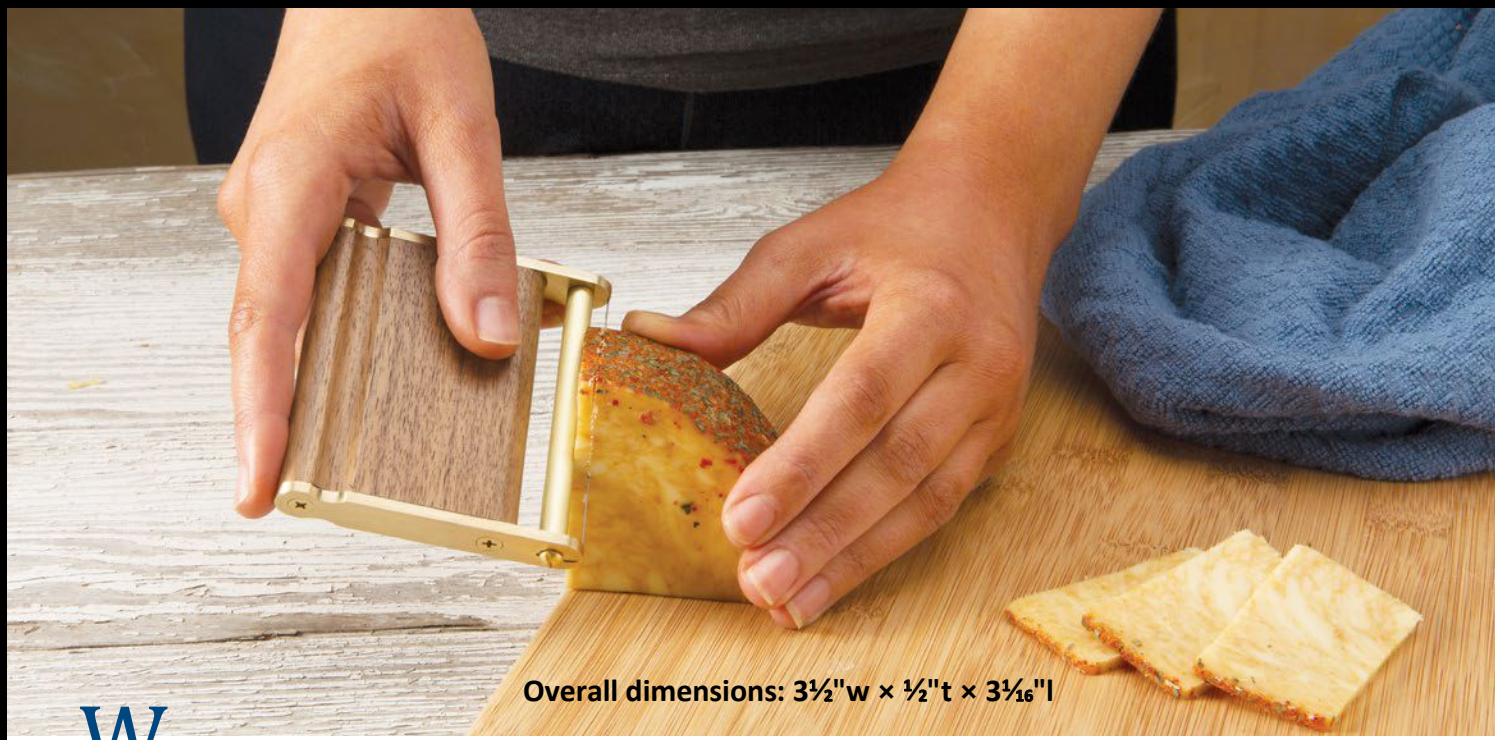
Brass & String Cheese Cutter

This classical instrument cuts cheese by the slice.

By Jim Downing



Overall dimensions: 3½"w × ½"t × 3$^{1}/_{16}$"l

While woodworkers like showing off their latest cutting board creation during friendly gatherings, here's a way to solicit an even more wide-eyed response. This brass, wood, and string gadget gleams with style while functioning to divvy up a block of aged cheddar. I'll show you how to work brass in the project with tools you already use for wood.

Make the handle

1 Mill a piece of walnut to ½" to match the width of the brass rectangle stock and cut the handle blank to 2⅜ × 8". (The extra length is for safe machining.)

2 Install a ½" core-box bit into a table-mounted router. Adjust the bit to ⅛" above the table. Locate the fence ½" from the center of bit as shown in **Figure 2**. Now, rout a ⅛" deep groove the length of the blank on both faces.

3 Next, round over the edges of the handle blank (**Figures 1** and **3**) with a ¼" round-over bit, feeding the stock against the router table fence.

4 Crosscut a 3" handle from the blank and sand it through 220-grit.

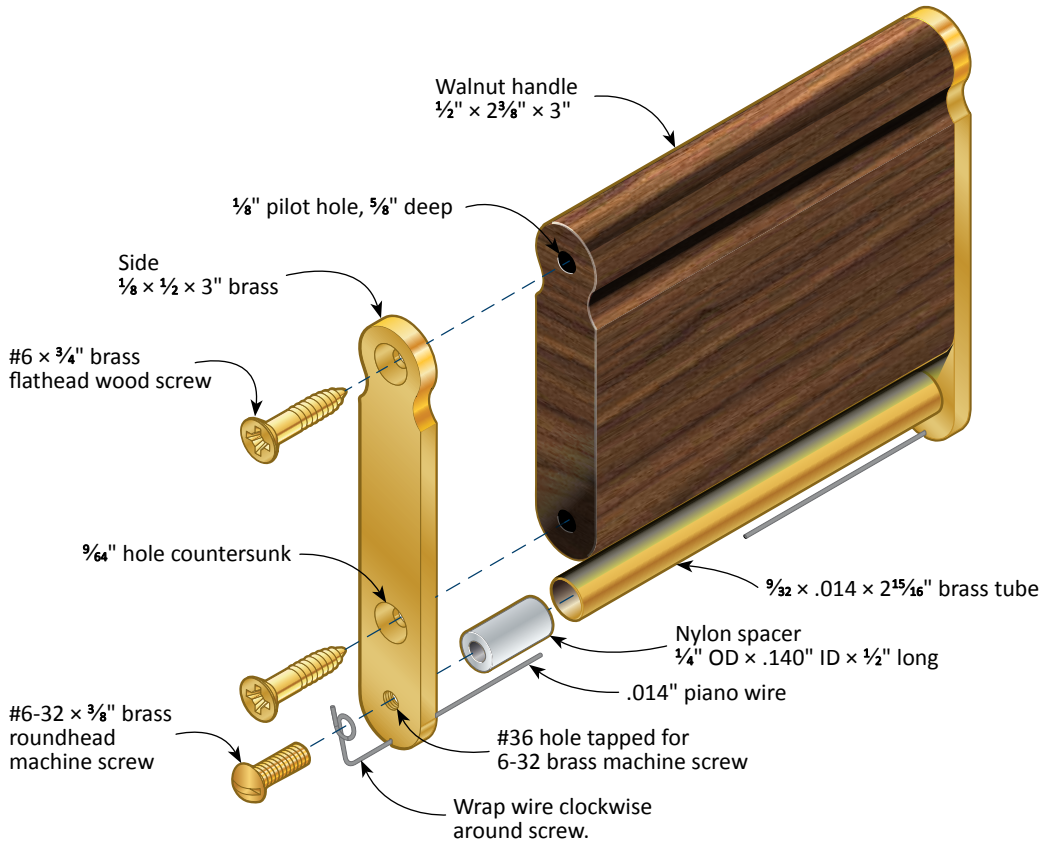
Fashion the brass sides

1 Scrollsaw two 3⅛" lengths from ⅛"-thick × ½"-wide brass stock. (I used a fine blade for cuts that require little filing and sanding.)

2 Lay out and drill two $^{9}/_{64}$" holes for the handle screws (**Figure 3**). With the brass piece clamped firmly in place, drill the hole at the drill press using a twist bit at 3,000 rpm. To keep the bit from wandering, use a center punch to indent the hole locations. Repeat for the other brass piece. Countersink the holes for #6 brass wood screws using a countersink bit at 250 rpm.

3 Locate and drill the holes for the roller screws using a #36 wire gauge drill bit (see the **Buying Guide**). This bit is ideally suited

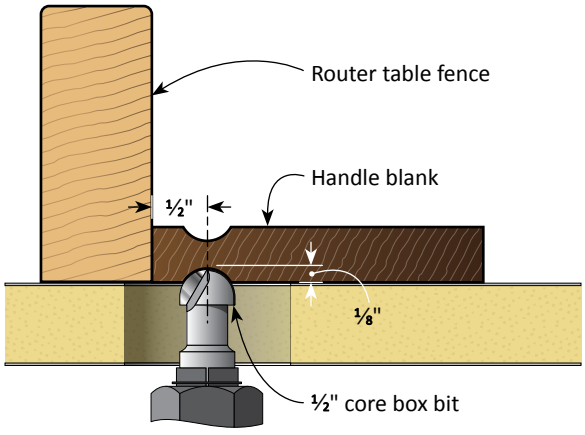
Figure 1: Cheese Cutter Exploded View



for a #6 NC 32-per-inch plug tap. Now, tap threads for a #6-32 machine screw, as shown in **Photo A**. The key to successful thread tapping is keeping the tap square to the material being tapped. Also, it is important to go slowly while using moderate pressure, turning the tap clockwise as it cuts the threads. When it starts to bind up, turn the tap counterclockwise, backing it out of the hole. Clear the metal fragments from the tap and continue on. Be patient; you will probably have to clear the tap six or more times. Some practice in scrap metal may be helpful if you have never thread-tapped a hole before.

4 To transfer the handle's shape to the brass side blanks, first wrap painter's tape around the ends of the handle to protect them. Using the brass blanks as templates and aligning them with the handle, drill pilot holes into the handle at the countersunk hole locations. Next, secure the brass blanks temporarily in place using steel screws. (Steel screws will tap the holes, preparing them for the softer brass screws later.) Finally, transfer the handle

Figure 2: Cove-Cutting Setup



Opening photo: Jim Osborn; Project photos: Caleb Rizzuti; Illustrations: Jim Downing

A

With the side held in the bench vise and the tap square to its face, cut the hole threads, lubricating as needed with cutting oil.

B

With the side blanks temporarily screwed to the handle, use a fine-tipped marker to trace the handle's shape onto the blanks.

shape on the blanks, as shown in **Photo B**.

5 Scrollsaw the sides to shape (**Photo C**) with a 12.5 TPI skip-tooth blade. Smooth the cut edges of the brass with files and 150-grit sandpaper wrapped around a block or dowel as needed. Scrollsaw the 1/32 × 1/32" slots for the cheese-cutting wire, where shown in **Figure 3**. Use the scrollsaw blade to shape a slight chamfer on the outside corners of the wire slots and to knock off sharp edges that could cut the wire. Finally, smooth and polish the brass sides with fine sandpaper and steel wool. ***Note:*** *Test and fine-tune the fit of the sides by reattaching them to the handle, marking any waste areas, and touching them up with sandpaper prior to polishing.*

Prepare the brass roller

1 Scrollsaw a 2 15/16" length of 9/32" OD × .014 brass tube, and touch it up at a disc sander as necessary to square the ends and remove burrs.

2 Retrieve two 1/4" OD × .140 ID × 1/2"-long nylon spacers. Apply a light coating of epoxy inside both ends of the brass tube, and insert a nylon spacer into each end, flush with the ends of the tube. (The spacer will push the epoxy into the tube where it will bond to the brass and act as a stop.) Allow the epoxy to cure, and then polish the brass tube.

C

Hold the brass side blank firmly to cut the coves and rounded ends while following the cutlines.

Final assembly

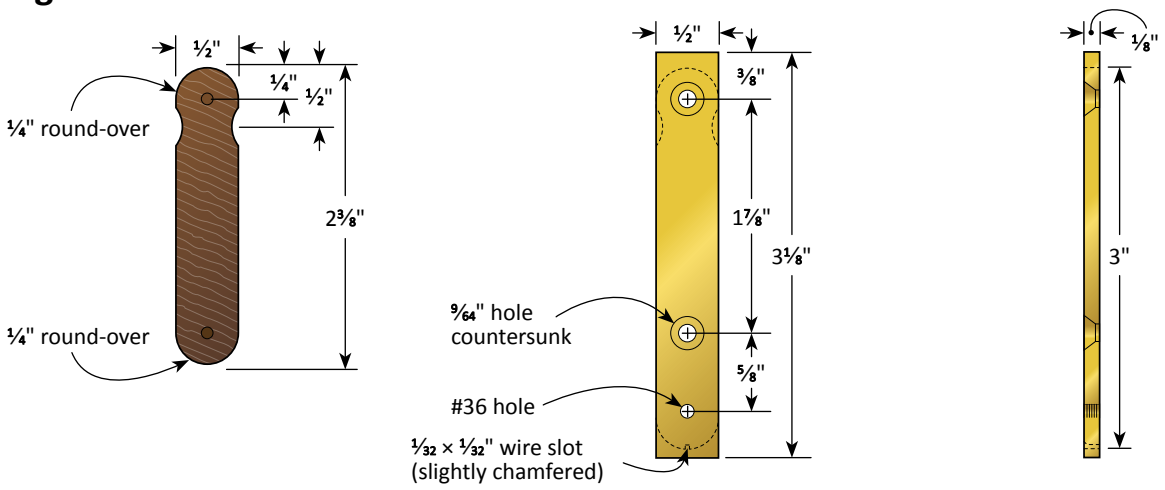
1 Finish the walnut handle (I used Behlen Salad Bowl Finish).

2 Attach the brass side rails to the walnut handle with screws.

3 Referring to **Figure 1**, mount the roller with the brass machine screws, leaving them proud. Now, secure the assembly in a vise with the roller end up. (I taped cardboard to the vise jaws to prevent marring the handle.)

4 Cut a length of .014" piano wire to about 6" long. Wrap the cutter wire clockwise around one of the screws. While keeping the wire aligned with the slot, tighten the screw to firmly secure the wire.

Figure 3: Handle and Brass Side Details



5 Next, bend the wire sharply into the slot. Using needle-nose pliers, pull it tightly across to the second slot and bend it down sharply to 90°, wrapping it clockwise around the remaining screw (**Photo D**). Tighten the second screw. Clip off any excess wire with side cutters. Now, cut the cheese. ***Note:*** *Clean your cheese cutter using warm soapy water and wipe dry. Refinish with salad bowl finish as needed.* ■

Pull the wire tight, and wrap it around the screw. Then, snug the screw to the side.

About Our Author

West Des Moines craftsman and designer Jim Downing has established himself as a top woodworking designer, having created furniture, home accessory, and outdoor projects since the early 1980s. In total, he has designed for 12 publications, with five of them being well-known woodworking magazines.

Convenience-*PLUS* BUYING GUIDE			
☐ 1.	Olson Skip-Tooth Scrollsaw Blades, #5 × 12.5 TPI, 12/pkg.	#15V23	$4.50
☐ 2.	Core Box Bit, ½" D × ⅜" CL, ¼" R, ¼" SH	#144119	$15.99
☐ 3.	Behlen Salad Bowl Finish, Clear, 8 oz.	#818879	$8.99
Above items are available at Woodcraft stores, *woodcraft.com* or by calling (800) 225-1153. Prices subject to change without notice.			
☐ 4.	Architectural Brass Rectangle, ⅛" t × ½" w × 12" l	385 HO2	$2.08
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☐ 5.	MM#36 Wire Gauge Drill Bit		$5.77
☐ 6.	MM#6-32 NC Plug Screw Tap		$2.08
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Supplies: (1) brass tube, K&S Engineering stock #132 - 9⁄32 × .014; (1) piano wire (also music wire) K&S Engineering stock #498, .015 × 36"; (2) nylon spacers for #6 screw, Servalite #58009, ¼" OD × .140" ID x ½" l. Available at some hardware stores and most hobby shops. (Note K&S Engineering and Servalite are both company names.)

Curvy Chair Repair

Complementary clamping cauls to the rescue

By Paul Anthony

It's not uncommon to have to repair furniture with curved parts, such as this Regency-style armchair. In the case of this particular patient, one of its armrests has completely cracked through where it joins to the seat with a couple closely spaced dowels (**Photo** above). Fortunately, it's a clean break, and requires nothing more than gluing the sections back together. Unfortunately, it's not a matter of simply slapping a clamp in place, since it can't get the purchase necessary to direct clamping pressure perpendicular to the crack. This is a job for complementary clamping cauls.

Although I'll show you a specific repair here, the basic principle of clamping with complementary cauls applies to the regluing (or new glue-up) of many curved parts. The primary concern is directing clamping pressure perpendicular to the joint line. In some cases–such as when clamping a couple of odd-shaped panels together–it's an easy matter of creating standard complementary cauls that simply create parallel clamping edges, as shown in the sidebar at top right.

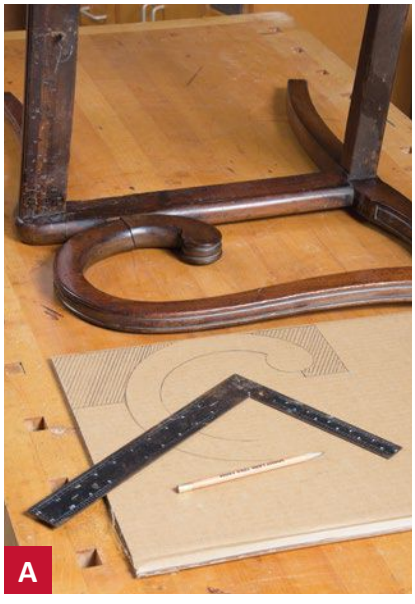
However, standard complementary cauls won't work for this armrest repair because there's no resistance in the space between the clamping points. This calls for something I refer to as "saddle cauls." These are simply complementary cauls with a ¼-thick plywood overlay attached to each face to allow fixing the cauls in place onto the workpiece. This keeps them from sliding or racking as you apply the clamping pressure to pull the parts together.

To make saddle cauls, trace the shape of the workpiece, and then draw caul patterns to match the contours (**Photo A**). Make sure to establish parallel clamp-bearing edges that will direct clamping pressure perpendicular to the break.

Trace the pattern shapes onto stock the same thickness as

Basic Complementary Cauls

In addition to repair work, basic complementary cauls (without plywood overlays) are often used for new work, such as joining these two symmetrical panels. If you're lucky, you'll be able to use your workpiece offcuts as cauls. If not, simply bandsaw some scrap to the necessary shape. Don't worry about imperfect cutline travel. A caul doesn't require glue-line joint tolerances.



Use a tracing of your workpiece to create caul patterns, making sure they're large enough to provide good bearing surface, and that they include parallel clamping edges.

The saddle cauls capture the parts to keep the setup solidly in place for rack-free clamping directly across the break line.

your workpiece, and bandsaw the cauls to shape. Next, create the plywood overlays, extending them far enough to allow good cross-clamping onto the workpiece. In this case, I extended them completely across the width of the arms (**Photo B**). Then tack and/or glue the overlays to the cauls.

All that's left is to clamp the overlays to the workpiece, apply glue to the break, and clamp the parts together, as shown in **Photo C**. ■

C-clamps secure the saddle cauls to the workpiece, while a bar clamp directly spanning the break line pulls the parts together.

Photos: Paul Anthony

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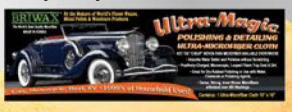

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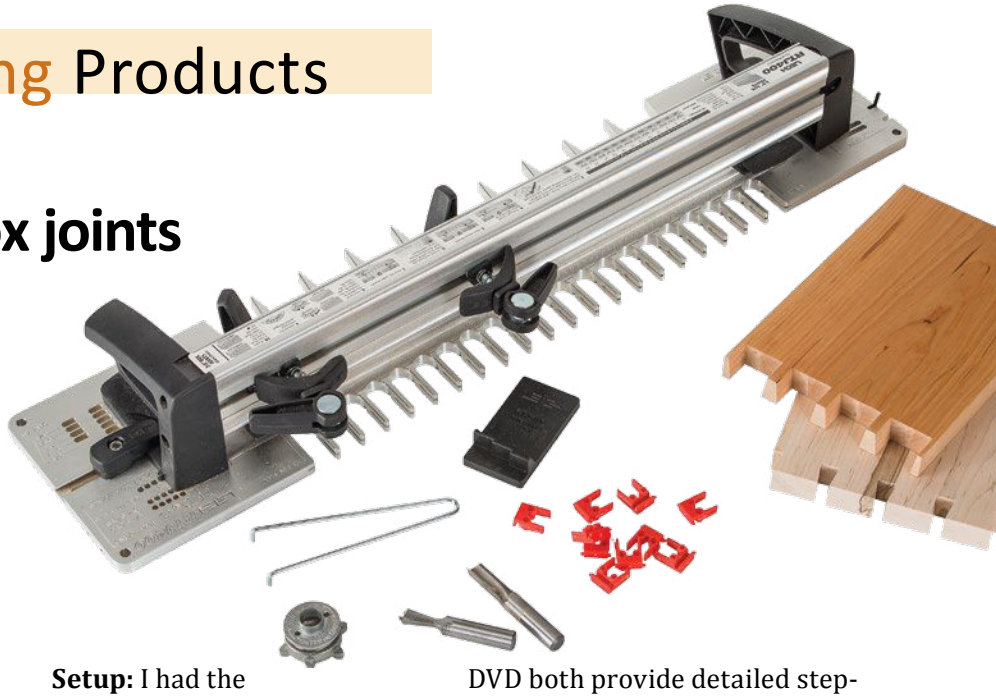


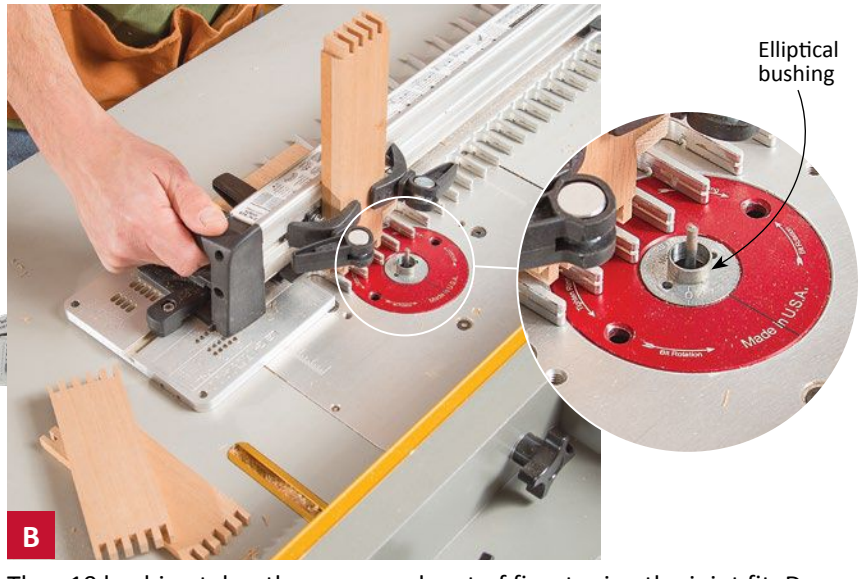
I think the world doesn't need another dovetail jig? Maybe it's time to think again. As a natural response to the plethora of router tables sporting precision power lifts and dust-collecting fences, Leigh Industries has created a dovetail jig designed to stand on its head. To find out how this table-riding template jig stacks up against the competition, I decided to run it through its paces. I discovered that the RTJ400 shares many similarities with its Leigh siblings, but is really in a league of its own.

Setup: I had the RTJ400 out of the box and making sawdust in about an hour, but jig owners know that assembly is only the tip of the iceberg. Unless you use your jig regularly, setup is a challenge every time you take it off the shelf. Realizing that months may pass between one set of joints and the next, the manufacturer provides instructions in three different formats: a spiral-bound guide, a 74-minute DVD, and five instruction strips (**Photo A**). The fully-illustrated book and DVD both provide detailed step-by-step instructions for all the joints. (I preferred following along with the DVD video on my laptop.) The instruction strips, designed to slide into the frame's top bar, offer a brief in-use refresher course for each joint type. The strips are also intended for the user to record e-bushing settings.

Trial Run: Using dovetail and straight bits, the RTJ400 allows routing through dovetails in stock ranging from ¼ to 1" thick, and half-blind dovetails

A

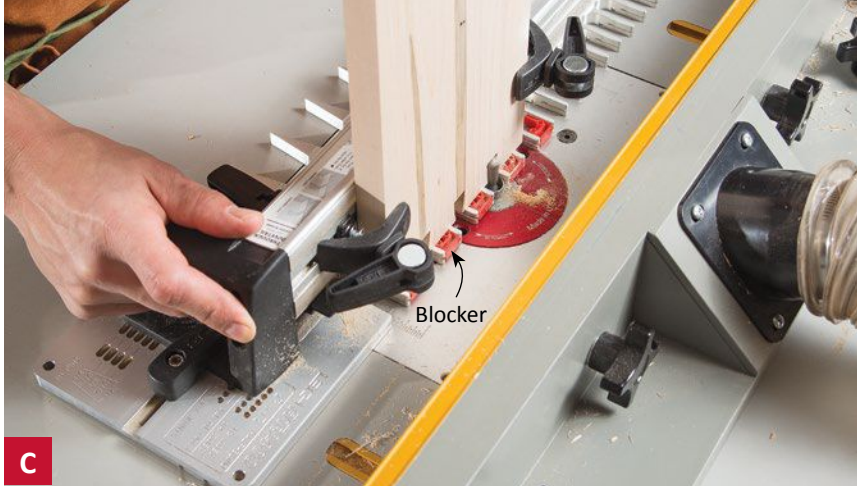
Leigh provides three different aids to help set the jig. With a little practice, you'll only need to glance at the strips.



B

The e10 bushing takes the guesswork out of fine-tuning the joint fit. Draw a reference line on your router table insert for dialing in the proper setting.

Featured products available from Woodcraft Supply unless otherwise noted.



The snap-in plastic blockers prevent routing between the wrong set of template fingers. Locating a router table fence dust port nearby extracts most of the dust.

in material from ½" to 1" thick. The jig's maximum board width capacity is 15½". Unlike the adjustable templates on some jigs, the fixed fingers on the RTJ400 dictate tail spacing, so you may have to design drawer heights and case depths to suit. That said, the instructions will help you select the right width and tail counts

I was able to achieve tap-tight joints in a few attempts due to Leigh's patented e10 bushing. This elliptically-shaped bushing and its etched-number face enable users to adjust a joint's fit in .001" increments (**Photo B**) and then record the setting for future cuts. I found the bushing to be a special blessing for box joints–a joint that often requires much trial and error. Dialing in the bushing is significantly faster and easier than bump-adjusting a jig with a sliding stop.

The orange plastic blockers deserve special mention. Routing through dovetails and certain-sized box joints may require routing into every other finger and it can be easy to lose count. The blockers snap in between fingers (**Photo C**) to keep the bit from routing where it shouldn't.

Although the RTJ400 is not outfitted with a dust-collection port, I quickly discovered that I could pull my router table fence into service to do the job, as shown in **Photo C.**

Tester's Take: Changing bits and setting bit heights with a table-mounted router takes more time than with a handheld router. In this instance, bench-mounted jigs have a slight edge, especially if you use one router for pins, and another for tails. But for single-bit box joints, this jig cuts as quickly as any other. (If the stock is ½" thick or less, you can rout two sides at once, cutting production time in half.)

The RTJ400's main advantage over its bench-mounted brethren is its stability. Thanks to the 6 × 27" aluminum base and solid cam clamps, this jig can handle tall planks without any fear of tipping. (For longer boards, you could flip it over and use it with a handheld router, but how many projects reach that scale?) Theoretically, a user could let go of the handles and walk away in mid cut.

Having watched woodworkers fumble with handheld routers, I'm a fan of any setup that keeps spinning bits at a safe distance (in this case, on the opposite side of the jig). Experienced woodworkers may not feel the need for such protection, but accidents happen...I've seen quite a few dovetail jigs with a few knicked template fingers.

Dovetails are dandy, but I expect that this jig will bring box joints back into the regular repertoire of many woodworkers. With the included ⅜" straight bit, you can start cutting ⅜", and ¾" wide box joints. Treat yourself to the 3/16" and 3/32" straight bits in the accessory kit (for matching-sized joints), and you'll be set to tackle everything from cabinets to jewelry boxes.

The RTJ400 is a perfect partner to any router table, especially those equipped with built-in height adjustment and dust collection. After using this jig, I'm saving up for a router lift so that I can put it to full use. ■

#160014, RTJ400, **$329.00**
#160015, RTJ400 Accessory Kit, **$159.00**

Photos: Larry Hamel-Lambert

Engineered Precision

The **TTS1400** Plunge Track Saw is a highly versatile, feature-packed tool with easy mode selection, fast set-up and advanced safety features.

When fitted to a track, the **TTS1400** delivers long, straight cuts, and the flat design of the blade housing means the saw will work right up to the edge of the workpiece - ideal for trimming doors and cutting hardwood flooring.

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Sorby TurnMaster Plus – the Ultimate Turning Tool Set

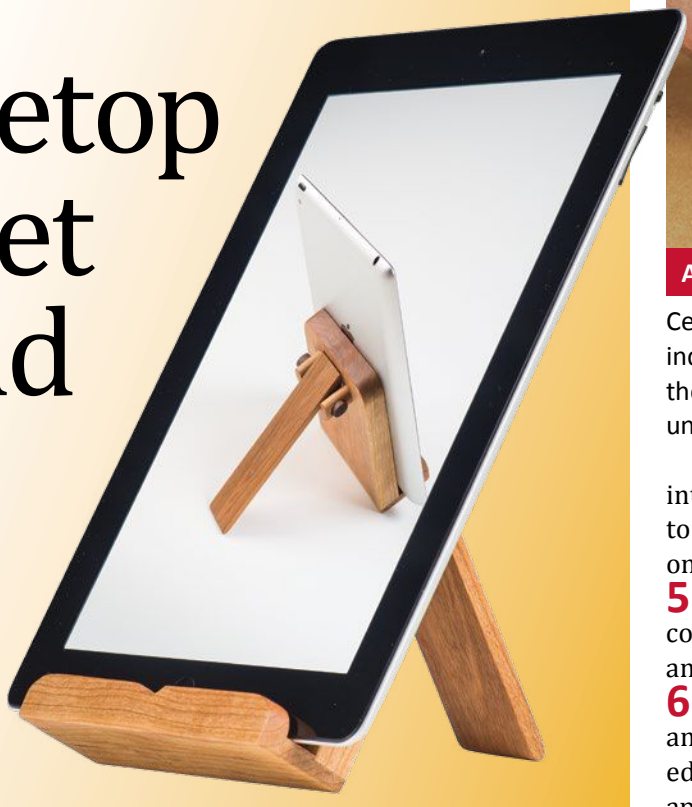
Woodcraft has partnered with Robert Sorby to assemble the ultimate turning set for any skill level, from the beginner to the advanced turner. The TurnMaster is a versatile system that combines a flat underside for added stability and control and a patented lock-tight head that can be set to three positions for shear, flat or traditional scraping actions – features that help reduce resistance from the natural grain of the wood for a superior finish.

Includes:

- A Handled TurnMaster (A)
- ¾" (19mm) Roughing Gouge (B)
- ⅛" (3mm) Parting Tool (C)
- Three Interchangeable Carbide Cutter Heads (Square, Round, Diamond) (D)
- Flat Credit Card Diamond File (E)

160155

Tabletop Tablet Stand



Cast this design in a supporting role.

Designed and built by Tom Whalley
Written by Marlen Kemmet

Overall dimensions: 5"w × 5½"d × 5"h (with back support angled)

Dock your tablet in this handsome holder, which you can make with scrapwood. The fold-out back support angles the electronic device for easy viewing while allowing you to rest the stand on a desk, table, or kitchen countertop. Fold the back support flat to store the stand away.

Start with the back and base

1 From ½" stock (I used cherry), cut the back to the size in **Figure 1**. Mark a ⅝" radius at the top two corners, and then bandsaw and sand the corners smooth.

2 Mark a pair of centerpoints on the back where shown, and drill a pair of ⅝" holes, ¼" deep.

3 Cut the blank for the base to 9/16 × 1¼ × 5". Using a zero-clearance insert and pushstick, make the two cuts on your tablesaw, where shown in the **Base Cutting Sequence, Figure 2**. First, set the blade height to 5/16" and adjust the fence to 5/16" from the blade. Now, with the blank face down as shown, make **Cut 1**. Next, raise the blade height to 13/16" above the table, and set the fence ¼" from the blade. Place the base blank on edge, and cut the groove (**Cut 2**).

4 Cut, drill, or drum sand a ½"-wide arched notch, 3/16" deep, into the top center of the base to allow access to the tablet's on/off button. Sand smooth.

5 Mark a ¼" radius at the top two corners of the base. Now, bandsaw and sand the radii smooth.

6 With the back edges flush, glue and clamp the base to the bottom edge of the back. Finish-sand and apply the finish. (I used Watco Danish Finish, Natural.) Avoid getting finish in the ⅝ holes.

A

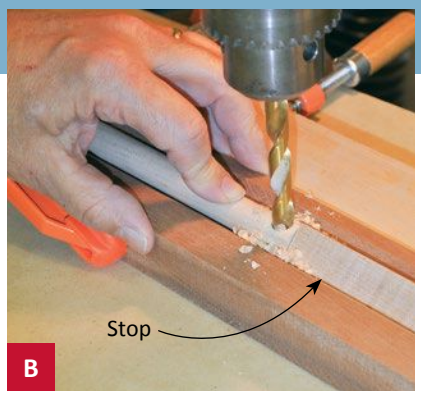
Center a brad-point bit above the indented centerpoint, and drill the through hole using a backer underneath to prevent tear-out.

Add the support

1 From ¼"-thick stock, cut the back support to 1½" wide and 4½" long. From ⅜"-thick stock, cut the pin support to 1½" wide and 1" long. Rout or sand a ⅛" round-over along the bottom edge of the back support. With the top edges flush, glue the back support and pin support face-to-face, as shown in **Figure 1**.

2 Using the support detail for reference, mark the curved cutlines on the two support pieces. Then, mark the hole centerpoint using an awl or finish nail to slightly indent the location. Center a ⅜" brad-point bit over the centerpoint, and drill through the support (**Photo A**). Bandsaw or scrollsaw the support profile to shape. Finish-sand and apply finish to the support.

Opening photo: Larry Hamel-Lambert; Project photos: Marlen Kemmet



Hold the dowel in place in the V-groove jig with finger pressure; drill a centered ⅜" hole 5⁄16" from each end of the dowel stock.

3 Make a simple V-groove jig from a block of wood. Install a ⅜" brad-point bit in your drill press. Next, mark the through-hole locations on the ends of a 6"-long piece of ⅝"-diameter cherry dowel, referencing the pivot supports in **Figure 1**. Now, place the jig on your drill-press table and center the bit at the center of the V. Place the dowel in the jig, centering the through-hole mark under the bit. Holding the dowel and jig firmly in place, slowly drill the through-hole so as not to chip the hole edges (**Photo B**). Repeat using the other end of the cherry dowel. Finally, crosscut a ⅞"-long dowel support from each end of the dowel. Finish-sand.

4 Cut the pivot dowel to length from ⅜" walnut dowel. Finish-sand the pivot dowel or the ⅜" hole in the pivot support so the center section rotates easily in the support. Next, glue the pivot supports into the ⅝" holes in the back, aligning the holes by temporarily slipping the pivot dowel in place.

5 Remove the pivot dowel, fit the back support between the pivot supports. Apply glue in the pivot support holes, and re-insert the pivot dowel, centering it. Let dry, and finish the dowel. ■

Figure 1: Tablet Stand Exploded View

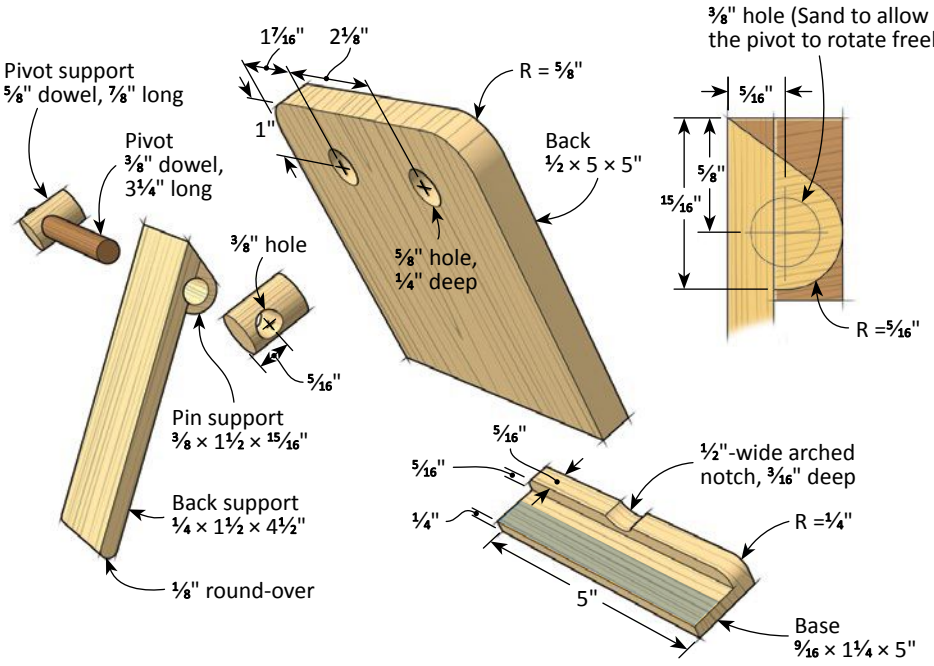
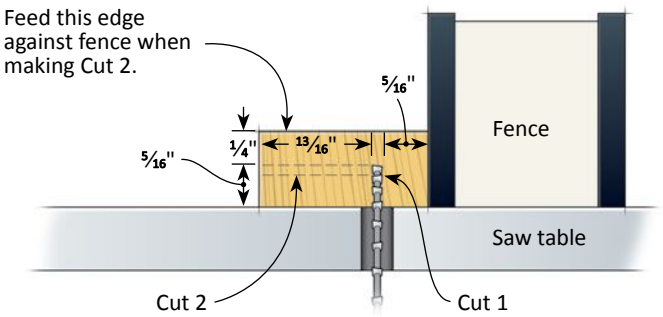


Figure 2: Base Cutting Sequence



About Our Designer/Builder

Urbandale, Iowa, resident Tom Whalley has been a woodworker for over 40 years and is the past president of the Des Moines Woodworker's Association. His award-winning designs have been featured in several national woodworking publications.

Convenience-*PLUS* BUYING GUIDE

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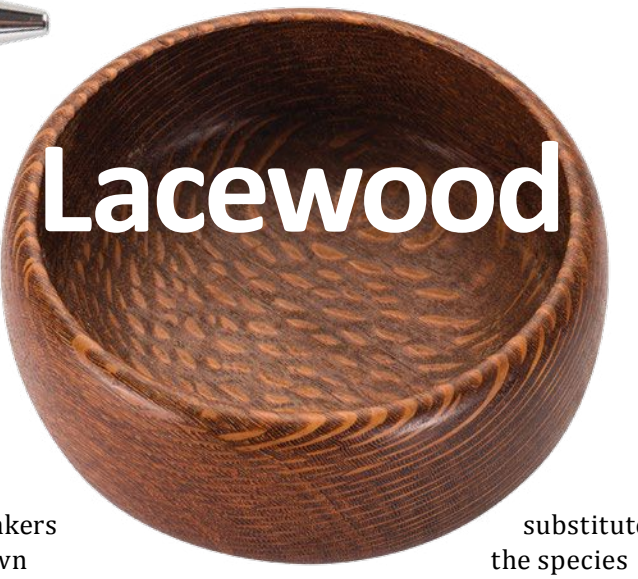
☐ 2.	Hardwood Dowel, Walnut, ⅜" D × 36" L	#50C02	$4.75
☐ 3.	Brad-Point Bit, ⅜"	#854365	$5.99
☐ 4.	Watco Danish Oil Finish, Fruitwood, 1 pt.	#124874	$12.50

Above items are available at Woodcraft stores, *woodcraft.com* or by calling (800) 225-1153.
Prices subject to change without notice.

Illustrations: Greg Maxson

Spotlight on Lacewood



A decorative wood with colorful roots

By Robert J. Settich
Technical consultant: Larry Osborn

Woodworkers in the United States have long delighted in the striking appearance of lacewood, which gets its name from the lacelike pattern of light-colored medullary ray flecks against a background grain that can range from pink to orange-tinged tan to brown. But during its colorful history, a number of different species have received the "lacewood" label, making it difficult to determine the wood's true origin. That said, lacewood remains a sought-after woodworking wood for a variety of uses, with many being decorative.

History in woodworking

The medullary ray look of lacewood results from quartersawing the logs. This makes the wood especially appealing to woodworkers who have used the wood for furniture, cabinetry, decorative boxes, inlays, turnings, and even carving. Antique American and British furniture contain woods that–back in the day–were referred to as lacewood. (See "Where It Comes From.")

Lacewood veneers have dressed up box tops and plywood panels for dramatic effect. Lacewood strips have served as eye-catching inlays. Musical instrument makers have glued down thin pieces for fingerboards, while knife makers employed it for scales. Because of the wood's susceptibility to rot and insects, you won't find it in outdoor projects.

Where it comes from

Sorting out the genuine article is a trying task because the lacewood name serves more as a marketing alias than a description of a single species. The earliest furniture woods referred to as lacewood were actually American sycamore and London plane tree. Both are *Platanus* species, with large and visually obvious ray flecks. *Cardwellia sublimis* was a much later species bearing the lacewood moniker. This tree, native to northern Australia, is more commonly referred to as Northern or Queensland silky oak in its native continent, even though it doesn't belong to the *Quercus* (oak) genus familiar to North Americans. As the wood journeyed to the United States, it acquired a new name–Australian lacewood.

Over time, the species became a victim of its own beauty and desirability and was overharvested to meet demand. This led lumber importers to substitute the species *Grevillea robusta*, called Southern silky oak in that region of Australia. It, too, is not related to the *Quercus* genus. But because the wood appears similar to its northern cousin, importers appropriated the Australian lacewood name for the species. Here, again, aggressive cutting depleted availability.

Today, a South American species from Brazil and Argentina (*Roupala brasiliensis*) fills the void while marketed under the lacewood name. (Some mistakenly still refer to it as Australian lacewood.) To add to the confusion, it is sometimes sold with a similar species–leopardwood (*Brosimum guianense*)–which is denser, heavier, and darker.

Despite all of the differences, the Australian and South American lacewood species are all part of the predominantly Southern Hemisphere botanic family Proteaceae, which includes some 60-80 genera and over 1,000 species. The South American lacewoods *Roupala* and *Panopsis* serve as current primary lumber sources. The trees can grow to 150' high and boast 4'-diameter trunks.

What you'll pay

You can purchase a ¾ × 3 × 24" lacewood board for about $19.00 at a specialty wood supplier, which may sell wood in a variety of thicknesses, widths, and lengths. A specially milled ⅛ × 3 × 24" board carries a premium price tag of about $13.00. Consider saving a few bucks by resawing lacewood stock when possible.

For individual ¾ × ¾ × 5" pen-turning blanks, expect to pay about $1.50; bundles of blanks carry a lower price per unit. You'll find larger 2 × 2 × 12" turning blanks for about $11.00. Use this size for shaping bottle stoppers, spindles, and handles.

Lacewood is also available as quartersawn veneer in several formats: no backing, paper-backed, and also with pressure-sensitive adhesive (PSA) backing. A package containing 3 square feet of unbacked veneer sells for under $12.00; 12 square feet of the same product is under $36.00, generating a significant discount. Purchasing a 4 × 8' sheet of PSA quartersawn veneer will set you back $275.00.

How to select the best stock

Quartersawn lacewood's decorative appearance results from ray flecks that can be large (up to 2" long), numerous, and distinct. These can taper down to much smaller flecks across a board's face and can even show up on edge grain. That is due to the spiral growth of the tree, making quartersawing uneven from one end of the log to the other. Because flatsawn lacewood appears dull and ordinary, you'll not find it sold commercially.

While large size flecks are an impressive characteristic, consider the style and scale of your project when choosing your stock. For example, a jumbo fleck on a pen turning will look completely out of scale. Also, be sure to match the color of the boards you select.

Working lacewood in the shop

Lacewood can be crosscut and ripped cleanly; the same can be said when edge routing. However, planing lacewood boards with large ray flecks can result in tear-out. Using sharp cutters, take only fine cuts and run the boards at an angle to reduce tear-out. Take fine passes when hand-planing, working diagonally across the grain. Better still, thickness the wood at a drum sander if you have one. A random-orbit sander works well smoothing lacewood surfaces. Note that the wood surrounding the ray flecks tends to be a smidgeon softer and may sand off more quickly, resulting in ray flecks that feel raised. Here, use a sanding block to ensure an even surface.

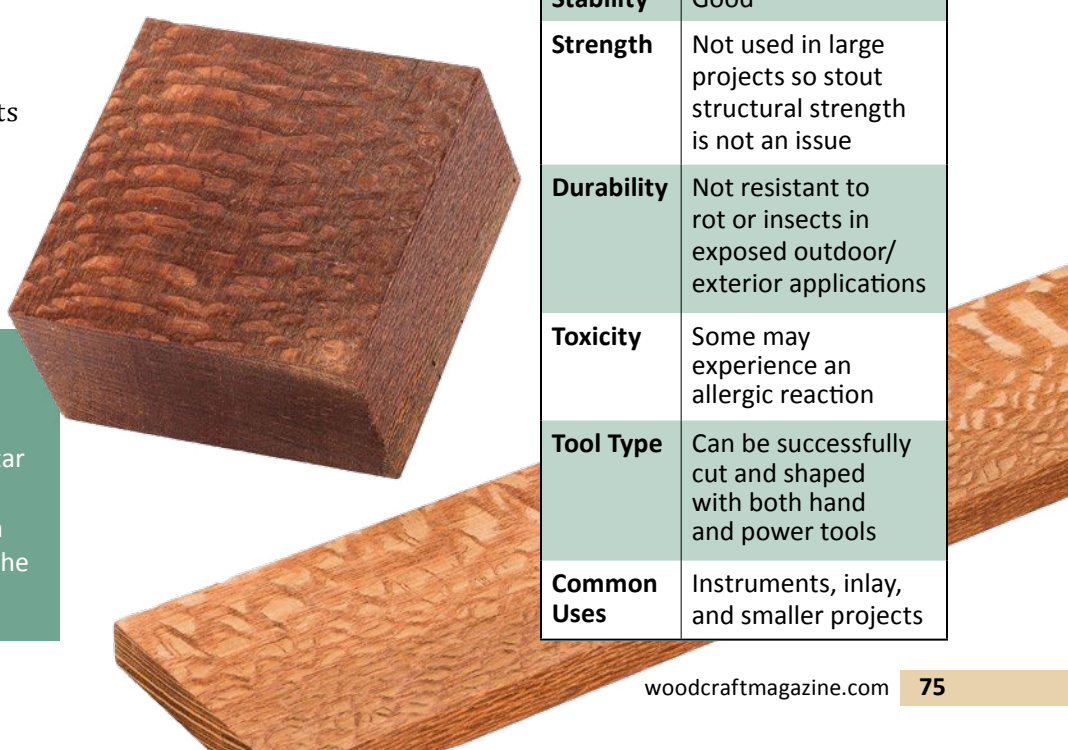
When sanding lacewood, be aware that some have suffered skin and eye allergic reactions to the dust. As a precaution, work with a small piece to see if you are allergic. Don a long-sleeve shirt and respiratory protection when turning and sanding, and wash afterward.

Due to the low resin levels in lacewood, common woodworking adhesives produce good bonding results. It also accepts all finishes and may darken with exposure to sunlight. ■

It's a fact that...

While Honduran mahogany is the preferred wood in guitar making for its tonal quality, lacewood has proven to be a sought-after alternative for the instrument's body and back.

Lacewood Quick Take	
Cost	Moderate
Weight	Moderate
Hardness	About the same as African or Honduran mahogany
Stability	Good
Strength	Not used in large projects so stout structural strength is not an issue
Durability	Not resistant to rot or insects in exposed outdoor/ exterior applications
Toxicity	Some may experience an allergic reaction
Tool Type	Can be successfully cut and shaped with both hand and power tools
Common Uses	Instruments, inlay, and smaller projects



Photos: Larry Hamel-Lambert

Ad Index

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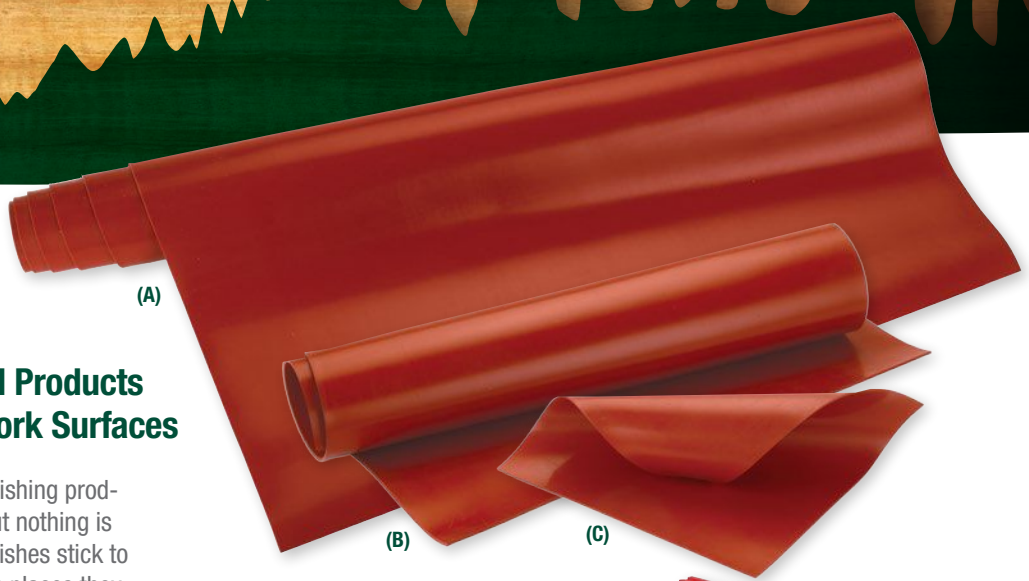

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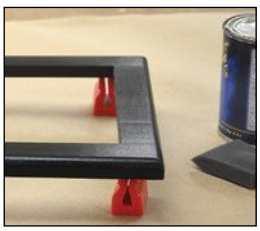
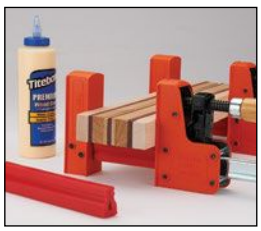
(A-C) Protects Worksurface (E, F) Great For Glue





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158721 12" x 12" Mat (C)
159912 12" Bar Keep Clamp Protector (D)
158496 Glue Roller Tray (E)
158722 Glue Roller (F)

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  PROVIDES AN ULTRA SMOOTH FINISH FROM ITS 26 HSS KNIFE INSERTS. SHEAR CUTTING ACTION PRODUCES LOWER NOISE.
- **HIGH SPEED STEEL INSERT KNIVES**
  2 SIDED, INDEXABLE HSS INSERTS CHANGE EASILY IF DAMAGED OR WORN. JUST LOOSEN, ROTATE AND RE-TIGHTEN!
- **EASY BLADE ACCESS**
  DUST COLLECTION TOP UNSCREWS WITHOUT THE USE OF TOOLS. GIVES CLEAR ACCESS TO THE CUTTERHEAD.
- **INFEED/OUTFEED TABLE EXTENSIONS**
  STEEL, FOLD DOWN EXTENSION TABLES PROVIDE EXTRA SUPPORT OF LUMBER AND PREVENTS SNIPE.
- **FLAT TOP FOR STOCK RETURN**
  FLAT CABINET TOP LETS YOU EASILY MOVE LUMBER FROM THE OUTFEED END, BACK TO THE INFEED END FOR ADDITIONAL PASSES THROUGH THE PLANER.

Model 70-220VSR

12-1/2"X 20" MIDI VSR LATHE

- **12-1/2” SWING / 20” BETWEEN CENTERS**
  THIS INCREASED CAPACITY LETS YOU DO MORE WHILE OCCUPYING LESS SPACE.
- **24 POSITION INDEX HEAD**
  ALLOWS ACCURATE PATTERN WORK TO BE PERFORMED ON PROJECTS SUCH AS FLUTING, GROOVING, DRILLING AND LAYOUT. IT WILL ALSO LOCK THE SPINDLE FOR ACCESSORY REMOVAL.
- **EASY ACCESS SPEED CHANGE PULLEYS**
  HEADSTOCK PROVIDES AMPLE ROOM TO CHANGE BELT POSITIONS QUICKLY.
- **REVERSIBLE SPINDLE ROTATION**
  CONVENIENT FORWARD/REVERSE SWITCH MAKES CHANGING SPINDLE ROTATION EASY. IDEAL FOR SANDING AND FINISHING OPERATIONS.
- **SELF EJECTING TAIL STOCK**
  NO NEED TO USE THE KNOCK-OUT BAR TO REMOVE THE CENTER.
- **ABILITY TO INCREASE BED LENGTH**
  MACHINED END ALLOWS THE ADDITION OF CAST IRON BED EXTENSION FOR 44” BETWEEN CENTER CAPACITY.

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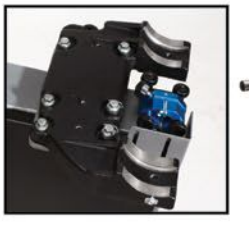

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